NEW SERIES. No. 43.] [JULY, 1902.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—ON MENTAL CONFLICT AND IMPUTATION.

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THE purpose of this article is very limited. It proposes to deal to a certain extent with the subject of divided will, the conflict in the mind of ideas generally, and specially of the ideas in desire and impulse. It will inquire into the alleged facts of action contrary to will with special reference to the general nature of volition. And its aim will be to point out the principles on which in practice we impute actions to our selves or again disown them. I have for some time desired to write this article in order, while trying to throw further light on its subject, to defend and in part to supplement the account of Will which I gave in MIND, No. 49. And I was led to desire this largely in consequence of a very interesting "Study in Involuntary Action" by Mr. Shand.[1] The proper course doubtless would be to treat systematically the whole topic of desire and volition, but that course (if I could follow it anywhere) is not possible here. Any paper of the present kind must at least endeavour to speak for itself, however

[1] In MIND, Oct., 1895. Compare other articles by the same writer in MIND, Oct., 1894, and July, 1897, and one by Dr. Stout in July, 1896. I perhaps may be permitted to say that I at the time wrote a brief reply to Mr. Shand's criticism. An unfortunate accident, however, prevented this from appearing at the proper moment, and so I thought it better to wait, not foreseeing the length of the delay. I have also made use in this paper of Dr. Stout's article, though I cannot assent to his definition of will. Compare also his *Analytic Psychology* and his *Manual*.

narrow its limits, but I hope that it may find support in other articles that have preceded and will follow.

Volition I take to be the realisation of itself by an idea, an idea (it is better to add) with which the self here and now is identified,[1] or it is will where an idea, with which the self feels itself one, makes its own content to exist.

I hope on another occasion to explain this thesis more fully,[2] but I set it down here as that which the present discussion will in the main support and defend. I have not forgotten that Mr. Shand has written, "It will be difficult for any one who has reflected on the type of abortive volition in involuntary actions to any longer maintain that the realisation of the idea is essential to volition" (MIND, N.S., No. 23, p. 291). In fact, I may say that the study of his interesting papers has done a good deal to confirm me in my view. The one defensible account of will (I must hold) is that which makes it consist in the self-realisation of an idea, and I cannot, even with Mr. Shand's help, perceive that a serious objection to this doctrine can be based on anything in those actions which he terms "involuntary".

I will at once proceed to state the objection urged against will's being essentially the realisation of an idea, the objection, that is, which Mr. Shand would base on the facts as he apprehends them. I will then try to show that, even when the facts are so taken, the objection will not hold good, and I will point out the falsity of that assumption which underlies it. I will then deal briefly with the nature of mental conflict and of action contrary to volition. And I will end by asking how the result gained will bear on imputation. But by imputation we are here to understand the mere fact that we accept or disown certain actions, and I shall not inquire if in thus disowning or accepting them we are morally right.

Will, we are told by the objection, cannot consist in the realisation of an idea, since there are facts which are inconsistent with such a definition. And the fact, which we are here concerned with, is the alleged instance of action which realises an idea but is contrary to will.[3] There may be two

[1] In MIND, No. 49, I left out this addition, not because I did not hold the doctrine, but because, having to treat a very large subject in a very small space, I tried, rightly or wrongly, to simplify the matter. The meaning of the phrase will be discussed in a later article.

[2] I may, however, in the mean time, refer the reader to MIND, No. 49, and again to MIND, N.S., Nos. 40 and 41.

[3] Mr. Shand proposes to call this by the name of "involuntary action". I do not myself see how we can fix the sense of "involuntary" as "contra-voluntary," when the term has a wider meaning which is so well

ideas present, it is said, at once to the mind, two ideas which move us towards two incompatible actions, and which, so moving us, conflict with one another. Each of these ideas, it is added, is felt as mine and is identified equally with myself. And we may take as an example the morbid desire for drink in collision with the effort after duty. When in the result an action comes in either direction, then by the definition either action alike should be will. But under at least some conditions when we have drunk we insist that we have not willed, but that our real will has been overpowered by the morbid idea. Hence the difference which constitutes the essence of will does not (it is objected) lie in an idea identified with the self. The difference must lie elsewhere, and Mr. Shand would appear to find it in an inexplicable Will.

Now I do not accept the above description of the facts as correct, for I cannot admit without very serious qualification the simultaneous presence of each idea. But before entering on this matter I desire to lay stress on another point. Even if it were true that the self is identified at once with two conflicting ideas, the self need still not be identified with them alike and equally. There may be a difference here which will amount to a distinction and to an alternative between Yes and No; and this difference will be a reason for our attributing the result of one idea to ourselves and for our disavowal of the other. To this aspect of the case Mr. Shand, I think, has not done justice. The difference here of higher and of lower, with the possible consequence of an alternative between will and no-will, is very far from consisting in the presence or absence of mere morality. A highly immoral act may in a sense be an act which is higher, and it may come in an eminent degree from my self and my will. And in short it is necessary to enter into an examination of the whole question from this side. We must ask in the case of ideas which move us, and again in the case of mental states generally, in what way one of these is higher and more mine than another. All of them are "mine," we are agreed, but there may be a special sense or senses in which they can be distinguished also as more and less "mine," and can even be distinguished as "mine" and "not-mine".

1. We all recognise the distinction between on the one side our true self, or our self taken as a whole, and on the

established. I fear that the result of such a struggle against language must be confusion, and I cannot perceive that the struggle is necessary. I should add that I do not forget that Mr. Shand rests his case against the above definition of will on other grounds also. I shall deal with these on another occasion.

other side a lower and chance self of some moment. There is a central group and order of certain feelings, ideas and dispositions, which we should call essential to our selves. And hence, when we fail to act in accordance with certain habits, interests and principles, or even act in a way opposed to them, the self that is realised is felt to be accidental and other than our true self. This is all so familiar that it would be superfluous to dwell on it, and taking it for granted I will pass on to insist on a further point. This distinction does not rest on the interference of an inexplicable something which is called the "Will". For it holds, in the first place, obviously between one volition and another[1] as well as between volition and other aspects of our nature. And in the second place it holds in cases where no volition at all is present. And a distinction applicable between volitions, and applicable also neither solely nor specially to volitions, cannot reasonably, I submit, be based on an empty "Will". "I was not myself when I could act in such a manner," "I was not myself when I could so think of you," "I do not feel myself at all to-day," "It was not like him to make that stupid mistake"—we have here some ordinary examples. We do not find in all of these cases the presence of volition, but we find in every case alike the false or the chance self in opposition to the genuine self. I in short fail to see how volition can here be specially concerned, since the same opposition seems on the contrary to prevail through every part of our being.

But, it may be objected, this distinction after all is but an affair of more and less. Outside of morality we may have perhaps a self which is higher or lower, but we never find a self which is really mine against a self which is not-mine, and which stands on one side of the chasm which divides Yes from No. An objection of this kind is common everywhere, but it seems really one-sided and superficial. Everywhere a difference in degree may amount to a distinction in kind. Everywhere, when you compare things with a view to some end, and so measure them by some standard, 'more' and 'less' may be opposed as what is right and is not-right. And in the narrow sense of 'moral' these distinctions are

[1] If the Will were taken as something known and possessed of a known character, then, of course, volitions could have more or less of this character, and so be distinguished among themselves. But if this same character were found also to exist in every part of our nature, there would be so far no reason for ascribing it to the Will. I am, however, in the text, speaking of a Will which, itself unknown, interferes from the outside.

not all moral, and they are not confined to the moral world. Wherever in theory or practice one particular course must be taken, it seems even obvious that the course chosen, because it is better, will become for that reason the one course which is not bad. I am not at present raising any question with regard to imputation, and I do not say that everywhere the worse course, if taken, would be disowned by myself. This is a further question with which at present we are not concerned. What I wish to point out here is that everywhere and through all regions of our nature we find a distinction between the self which is, we may say, essential and the self which is accidental. And this distinction, however much it rests upon difference in degree, can and does come before us as a difference in kind between mine and not-mine.

It is the concrete matter and substance of our selves with which we have been so far concerned. And hence the distinction, so far as it has at present been drawn, may, if we please, be called *material*.

2. I pass from this to consider other ways of distinguishing higher from lower and mine from not-mine. There are several of these which in comparison with the foregoing may, if we please, be called *formal*. Everywhere the more universal, we may say, is the higher and more mine, and it is on this principle that all our formal distinctions rest. But it was really this same principle which was involved above in our 'material' distinction. For, since our self is in its essence a system and concrete universal, the more general and the more material will in the end be identical. The higher, because it is higher, will for that reason be wider, and it will also be lower in the sense of being more deep-rooted and fundamental. But, though at bottom the same, these principles may diverge in practice and may even be opposed. The more general may often be only more abstract, and the increase in abstraction may be at the price of greater onesidedness and emptiness. Hence the higher will here be higher in one respect only, while viewed from another side it may be lower and worse. It is in a word but higher formally. On the other hand that which is less abstract may often be really more universal. For it may extend far more widely, it may represent more of the whole, and, containing a greater amount of the essential matter, may so in the best sense be more material. But this opposition, we must remember, is not absolute, and whatever is higher materially would, if it became explicit, be higher also formally. On the other side in practice there is a relative division and a divergence of two principles. And hence I will go on to point out some

varieties of what may be called formal superiority. There are real differences between these, but the differences all come from one ground.

(*a*) In theory and practice alike a course will be formally higher when it explicitly and consciously asserts a principle instead of embodying it unconsciously. It is a higher thing, we may say, to act, knowing why we act, than it is to act simply. On the other hand, if you compare two actions while taking them as wholes, that which is conscious of no principle may of course really be the higher. For the principle asserted formally by the other action may be defective and narrow. In other words to act with a reason is, so far as it goes, higher than to act without one, but in any particular case the man who can give no reason may have more reason on his side. We know the one-sided theorists who always go upon a principle and who usually go wrong, because their principle is too abstract or (it comes to the same thing) is too narrow. And on the practical side the same defect is familiar. When, to take an extreme case, I protest that 'I do not care what the thing is, I will do it because I have said so and because I choose'—such a course is in one sense extremely high. I am appealing to the idea of the self which is a law to itself and is a principle superior to anything in particular. On the other hand I am applying this principle not as an individual system and whole, but as an empty abstraction. The connexion therefore between my principle and the particular act is accidental and external, and is perhaps supplied by the meanest and narrowest caprice. Still, if you consider it formally, my act is really higher and is more mine than if without consciousness of any principle I had acted rightly. In the end there will be no divergence between what is best materially and best formally, but in any given case an opposition between the two may arise. And we must admit that to be conscious of a principle is, so far as it goes, a genuine superiority.

(*b*) I will pass on to another kind of superiority which also is formal, and which exhibits the same principle in a different application. We know both in theory and practice what it is to adopt a course at once and unreflectingly, and what it is on the other hand first to pause and then to say, 'Yes, I will take it'. I am not referring to the instances where incompatible suggestions leave us paralysed, and where, after oscillation or forgetfulness, one of these suggestions returns and determines our action. I am speaking of cases where we do not merely pause, but where we pause and reflect. We

have a special end which is strong enough to prevent action until some course has been mentally qualified as its means. Or from the mere habit or, again, the idea and conscious principle of waiting, in the presence of a difficulty, until we have seen the thing from all sides—we in the presence of some suggestion or suggestions repress and suspend action. The suggestion or suggestions, whether in theory or practice, are, we may say, negated; they are for the moment alienated from my self and made into objects. This does not of course mean that they cease altogether to be felt, but it means that, in becoming objects and in being held before me, they tend so far to be felt less, and are kept in check by a principle with which the self is identified. These facts are so important that it is better to recognise them, even while ascribing them to a faculty or a miracle, than it is to ignore them altogether; but I cannot perceive that we are driven to a choice between such alternatives. In the earlier stages of the mind there is of course no reflexion at all. Ideas which conflict in our minds leave us helpless and a prey to various kinds of oscillation. It is later, when possessed by some idea which we are unable to realise, that we make the means to this end, and again what opposes it, into the objects of our thought. And as the end becomes more generalised, and, we may say, pushed further back by conflict and competition among its details, the end naturally will come to hold under it a number of alternatives. And these alternatives are by the agency of this end, with which our self is identified, brought before us as objects. In this way arises the habit and the principle of suspending action in the presence of difficulty or doubt, and of considering the possible courses. But it is still and always that higher end, under which the alternatives fall, which is the fixed and active principle. It is the identification of my self with this higher principle, whether in unconscious habit or conscious idea, which checks the suggestions[1] and neutralises them, while

[1] I use the plural because I presume that, under normal conditions, if a suggestion in theory or practice really were and remained single, and strong enough to overcome what may be called my psychical inertia, I should certainly follow it. What restrains me is the presence in some sense of an alternative, and the only question is as to how general or how special this alternative is, and again at what point it is brought to consciousness. In connexion with the doctrine of the text I would advert to the phrase 'to collect oneself'. My self is dispersed by being identified with conflicting suggestions and scattered in their disorderly struggle. It is collected when the various incompatible courses are taken all alike as *not* the end and as inferior to the end, but at the same time as possible means to the end. It is this which at once both negates and

keeping them as objects before me and in a sense apart from me. And it is because my self is on the one side identified with this principle of a higher self, that a suggestion can be felt by it as on the other side embodying the lower self of the moment. And here in these cases we find the source of my felt constraint and self-alienation, and here is once more the reason of a further experience. When after reflexion's pause a suggested course coalesces with the idea of my higher self, or at least ceases to arouse the opposition of a principle higher than itself, that course becomes, as we say, adopted. My self, before which the suggestion was held as something alien and incompatible, now feels itself one with the suggestion and experiences that as its own self-assertion and development. Hence the process of the idea comes to me now as my truth or again as my reality that is to be. And it is because the possible alternatives have one and all been previously negated and so separated from my self, that my self is now free to discharge its collected and undivided energy in this single direction. And the coalescing of the self with that suggested modification of itself which was for a time held aloof, naturally brings with it the heightened experience of reunion after estrangement. Here is the origin of that "electric thrill" which Prof. James seems to find inexplicable by psychology, and, if I may say so, endeavours to exploit for a mistaken end[1]. But, without attempting here to dwell

subordinates the suggestions, and, while checking their independent action, retains them as objects. And it is by identifying myself with this central principle that I become collected and confront the detail as my property.

[1] The great reputation which Prof. James deservedly enjoys as a psychologist compels me somewhere to notice his doctrine of moral responsibility. But even that very sincere respect and admiration which I feel for his work in psychology does not, I am sorry to say, make it possible for me to speak of this doctrine respectfully. When in the presence of two alternatives (so Prof. James informs us), one of which is remote and ideal, while the other presses on me with sensational urgency, I will the former with an effort—this is something unaccountable. It is, among other things, an action in the line of the greatest resistance. It is also the real essence of volition, and, being an affair of the purest chance, it is a conclusive instance of Free Will. And the fact that when I am tempted there is absolutely no reason why I will one thing and not the other—this fact, Prof. James assures us, is a pledge that morality is not an illusion. But "chance" appears with Prof. James to have several senses. In his *Will to Believe* (p. 155) it is said to mean than under absolutely identical conditions the same result need not follow. This is, as I understand it, really to contend that the same A is at once and in precisely the same sense both B and not-B, a contention which obviously would destroy and remove the whole notion of truth. Every one who anywhere desires to ask and to speak about the true and

further on a large and interesting topic, we may pass to our conclusion. In theory and in practice alike a course that has been adopted after reflexion will be so far superior. It will at least in one respect be a higher expression of my true self. The reason of this is that such a course has been separated from union with my self as the mere self of here

the false, must begin by postulating in effect that any such contention is absurd. And even in the *Will to Believe* I find indications that such an undiluted absurdity is not what really is offered. There are signs, I think, that what Prof. James actually means is that the two cases really do differ, but that, not perceiving in what without prejudice to his conclusion such a difference could consist, he has been led to deny its existence. There appears to me to be at any rate a very serious confusion in his *Psychology*. Prof. James there states the alternative as being between Free Will and Determinism, so that whatever is not Determinism is *ipso facto* Free Will. He then seems to define Determinism as the doctrine which holds that the duration and the intensity of any effort which we put forth, are "fixed functions of the object" (ii., 571) or "mathematically fixed functions of the ideas" before our minds (574). And any other doctrine but this (so I understand) is defined as Free Will. This is to say that in volition you are ordered to strike out (*a*) the influence of what is actually in the mind though not before it, and (*b*) the influence of everything in the shape of a disposition whether natural or acquired. You are to accept this mutilated view, which not only in the case of volition but throughout psychology you probably consider to be quite untenable—or else, according to the sense in which I am forced to understand Prof. James, you are compelled to embrace the alternative of pure chance. And the only comment upon such an issue which I could offer would be this. I do not understand how any one with the abilities and knowledge possessed by Prof. James could present such an issue to his readers unless his mind were influenced by ideas extraneous to psychology. And when he himself appears to hold Determinism, as thus defined, to be for the most part satisfactory to himself, I can hardly suppose that I have rightly apprehended his meaning.

With regard to "action in the line of greatest resistance," I will add a few words. We have here once again, as I understand it, the false alternative to a doctrine which itself is false, and the application to the soul of these mechanical doctrines is not likely to result on either side in anything satisfactory. The fact referred to, I presume, is this, that ideas and principles have not motive power in proportion to the amount of psychical perturbation which immediately corresponds to them. We therefore can choose the alternative which produces, and which we know will produce, most temporary trouble and unrest. But I am unable to perceive that this fact is in any way even abnormal—to say nothing of its supporting the worship of blind Chance. We find the same thing regularly in the world that is merely intellectual. Where I refuse to adopt a principle of explanation which would make things easier in a particular case, if to do this would conflict with my more general principles—this is to follow (if you *must* say so) the line of greatest resistance. But for myself I must decline to adopt metaphors which seem to me to be false and misleading (*cf.* here Dr. Stout, MIND, N.S., No. 19, and *Manual*, p. 596).

About the claim to base moral responsibility upon mere chance, and to make it literally an affair of sheer accident, there is but little to be said.

and now. And it has been brought, consciously or unconsciously, under the principle of the self that is above the detail of one moment, and is in the best sense universal. But this formal superiority, we must remember, may be one-sided. It may on the whole be consistent with, and may even conduce to failure. The self that has risen above the particulars of the moment's detail may remain idly suspended and incapable of re-entering them with collected force. Or,

And, again, whatever seemed called for from me has been said now a long time ago. I must be allowed to express my opinion that apart from its theoretical absurdity such a claim is morally revolting, or would become so if it really could be seriously urged. Prof. James, it is true, seeks to attenuate this paradox. He limits, as I understand, my moral responsibility, and makes it begin and end with those cases where I decide with an effort in the presence of temptation. It is only here, he urges, or seems to urge, that my conduct is really a matter of pure chance, and that I, in consequence, am a responsible agent and not "the dull rattling of a chain, etc." (i., 453). But, if I had to choose, I should myself prefer the unlimited absurdity; for that is more consistent, and I cannot see that it is any more absurd. And if I am asked how, if these doctrines are really what I think them, they can possibly come to be upheld, I must answer as follows. I am forced to believe that these results are not got by an unprejudiced inquiry made direct into the real claims of our actual moral nature. Wherever they are reached, they appear to be reached by reasoning downwards from alternatives now long ago argued to be vicious. They come from our looking at morality while one eye glances at theological dogma. They are got, I must be allowed to add, by our neglecting to ask ourselves whether in the end what we mean is anything positive. If, in the presence of his moral experience a man objects to every form of Determinism which he finds offered him, on the ground that none of these forms is adequate to the fact—such a man may be mistaken, but he most assuredly is so far not irrational, and I at least so far could not refuse him my respect and even my sympathy. But if, assuming first (and it is a great assumption) that some doctrine capable of satisfying us wholly in this matter is possible, any one goes on to set up that which he takes (perhaps without sufficient inquiry) to be the opposite of Determinism, and then asserts this opposite without so much as asking if, considered morally, it is itself even tolerable—it is impossible for me to treat any such conclusion with respect. And I have thought it better, even at the risk of giving offence, to express in plain language what I think and feel on this unfortunate subject. Such thoughts and feelings are not very exceptional, and I should like to make it more difficult for any one quite to ignore them. And since Prof. James has himself, as I think rightly, expressed himself freely on this matter, I am the more inclined to hope that I have not been wrong in doing so likewise. It is really the high standard which elsewhere he has kept before our eyes which has in a manner forced me to protest against what I cannot but regard as a dangerous lapse.

Nothing in the above remarks must, of course, be taken to apply to the theory of Pluralism as against Monism. It would certainly be quite incorrect to identify Pluralism with a doctrine of absolute chance, or with the claim that such an idea is the foundation of morality. On Prof. James's doctrine of volition and consent I shall hope to comment in a future article.

if driven into action, this self may be driven in the end by external accident and chance caprice, and the result will in the end really not have come from or depend upon the inner principle. And it is another case of the same defect where, without morbid suspension, the principle has been taken too abstractly, for here once more there will be no vital connexion with the particular result. Still, in one respect and in general, an act adopted after reflexion will be so far higher and more mine.

(c) From this I will go on to consider another variety of formal distinction. When we have before us A and B, the ideas of two incompatible courses, we may or we may not recognise these ideas as in the proper sense alternatives. If we so recognise them, then each is qualified for us by the negation of the other. When, in other words, we think of A, we think of it as A which excludes B, and in the same way we qualify B by the exclusion of A. And, taken thus as alternatives, A and B are so far placed on the same level, and you cannot say that one of them is formally superior to the other. But the case is different where A comes before us as qualified by the negation of B, but where on the other hand B is not actually thought of as excluding A. In this case B, however incompatible with A, does not come before us as containing the negation of A. And hence, taken formally, A and B are so far not on a level, since, as I think of them, while A embraces and subordinates B, B on the other hand does not contain any explicit negation of A. B is therefore, we may say, thought of as standing under and subject to A, while the subjection of A is not made any part of B's content. And A will therefore clearly so far be higher and will be so far more mine. It will be higher because it is wider and more inclusive, and is in this respect nearer to the idea of my true self as an individual and concrete whole. It is however scarcely necessary to point out that, here as before, a formal superiority may be barely formal, and may amount practically to nothing. But once again, so far as it goes, we are bound to recognise it. And trivial or trifling as this distinction perhaps may appear, we shall find that in its application it may possess great importance.

3. There remains a principle of distinction which, though connected with the foregoing, does not directly fall under them. An idea which is pleasant or more pleasant is so far higher and more mine, and an idea that is painful or more painful is, on the other hand, less mine and lower. In a given individual case this principle may of course prove one-sided and so far false, but still, as far as it goes, it will

remain always true. And, taking the world as a whole, we have some reason to believe that any divergence between this principle and the foregoing principles is but local and relative. We make no assertions about the goodness or badness of pain and pleasure *per se*, and we leave that to the Hedonist and to others who insist on taking abstractions for realities. We find in fact that pain is connected with contradiction and defect, while pleasure on the other side goes with increase of being and with harmony. And, if we are wise, we shall not seek forcibly to divide these aspects. We shall not attempt to derive the one of them from the other, or to make either of them in abstraction the absolute good. But, avoiding this error, we may fairly say that the pleasant and the more pleasant is so far higher and more mine, while with pain the opposite is true. We might call this distinction material, on the ground that pleasure and pain are not forms but are sensations or feelings. We might again, if we chose, insist that this distinction is but formal, since it to some extent varies independently of that which is material. But in my opinion we shall do better if we leave these terms alone. They are of little value anywhere, and used here they would probably even be mischievous.

I would, before proceeding, once more remind the reader that all these distinctions in degree may, under some conditions, amount to differences in kind. Everywhere that which from one point of view is but more and less, becomes from another point of view right and wrong, and true and false, and mine and not-mine. The interval bridged by degrees becomes, in other words, the open chasm between Yes and No. And now, in view of the above distinctions, I would submit that, apart from mere morality, there may be differences between a higher and a lower self. To hold that when my self is identified with ideas, these ideas must, outside of the moral sphere, all equally be mine is surely indefensible. We have found enough differences in the daylight, and have seen no need to invoke the darkness of an inexplicable Will.

I will pass on now to consider the actual facts of mental conflict and the struggle of ideas and desires to move me in opposite directions. And it will be convenient in this article to speak of these ideas throughout as being also desires, even where they really are not so.[1] It was, we saw, maintained

[1] The main difference here lies in the presence or absence of pleasure felt in the idea (see MIND, No. 49). I shall in the present article take some account of this difference with regard to imputation, and I hope to touch on the general nature of desire in a future article. It will be

that I could have before me at once two incompatibly moving ideas, and that my self could be at once identified with each of these ideas as actually present together. And it was added that, though either of these ideas might be realised in fact, we had not in each case alike with this the presence of volition. And from this a conclusion was drawn as to the nature of will. On the other side, the reader will remember, I have already urged that, even from the ground of these alleged facts, the conclusion does not follow. And I will now give my reasons for not accepting the facts as alleged. The subject is of course a very old matter for discussion, and it must always remain difficult on account of the number of questions which it involves.

What in the first place, let us ask, are incompatible ideas or desires? They are such as, being diverse, would qualify the same point incompatibly.[1] But when we have such incompatible ideas or desires, we need not know them to be incompatible. We may have them, and know that we have them, and yet may be unaware that they are contrary. And in the first and in the simplest case of such unawareness the ideas have never as yet collided. They come before us as one single complex of idea and desire. They are, in fact, but diverse elements contained in one desire and one idea, and within this whole they are so far simply together, and coupled, we may say, by a mere "and".[2]

But as soon as action begins, these elements naturally prove incompatible. In their movement towards reality our ideas collide, and the 'and,' which joined them in harmony, at once disappears. In our attempt to act we either altogether fail to produce an action, or, if we succeed, we succeed but in part, and perhaps with painful results. And, led thus to pause and to consider, we may perceive that our desires interfere one with the other. Hence they are known now to be incompatible, and can no longer come before us as mere positive elements in one whole. And on this (*a*), one desire and one idea, as being far stronger than the other, may simply

understood, of course, that I recognise desire nowhere where an idea is not present. The general head for me is that of 'moving idea,' and 'desire' I take to be but one kind that falls under this head. It is merely for the convenience of the reader that in this article I make the two co-extensive, and I would beg him, in justice to me, to remember this.

[1] This means in the end that they would, being diverse, simply qualify the same point (see MIND, N.S., No. 20, or *Appearance*, Appendix, Note A).

[2] For a full explanation of this, I must refer the reader to a former article in this series, MIND, N.S., No. 41.

extrude it. The weaker idea may once and for all be driven out as an idea, and the result, which it leaves behind it, may be inappreciable, or at least too weak to reinstate it. And in this case the conflict of desires, in the proper sense, is at an end. But (*b*), if for any reason the desires are more equally balanced, such an extrusion will not happen, and in its stead a process of ebb and flow and of oscillation may set in. The ideas are not yet qualified for our minds explicitly one by the negation of the other, but practically, as soon as either begins to occupy us, the other also appears and struggles to expel its opposite. Each for the moment succeeding is in its turn forthwith driven out by the other, for neither by itself or again with the other can content us. In this alternation when, for a time, one idea is excluded, then for that time the desire which corresponds is in the strict sense at an end. But an idea, thus expelled after fluctuation, cannot fail more or less to survive in its effects. A mass of excited feeling which was joined with it will remain behind, and this feeling will be incongruous with, and will struggle against the other idea which, for a time, has prevailed. The dog who, desiring to eat the forbidden, has been rebuked by his master, may for the moment have ceased in the proper sense to desire it. The idea of eating has been driven out, but the felt flow of saliva, with other elements of excited feeling, will remain. There is hence a psychical group incongruous with the idea of ready obedience, and struggling to restore its own opposite idea. And in the case of aversion the same thing will naturally hold good. We may have overcome our aversion in the sense that the idea of escape or destruction is banished. But none the less, feelings and movements which correspond to that idea may survive, and to an extent greater or less may strive against the prevalence of the counter idea. We may take as an instance of this the resolve to swallow some nauseous drug. We, in short, have not here, in the proper sense, the actual aversion or actual desire, but we still must be said to be averse or desirous.[1]

(*c*) What will be the end of this alternation of contrary desires? If the need for action is felt to be imminent, the chance pressure of some moment will force, we may say, accidentally one idea into reality. But, apart from this, the oscillation will tend normally to cease, as, from whatever cause, the excitement dies gradually down, and the ideas

[1] I hope to return to this whole subject. On the nature of aversion, I must, for the present, refer the reader to MIND, No. 49, p. 21. The ordinary doctrine on this head I still venture to think very seriously mistaken.

move us less strongly. We (i) may relapse into a state where we even forget the incompatibility and the conflict. And here, once again, we unite our opposite ideas and desires as elements in one positive whole, and simply re-join them by an 'and'. Or (ii) preserving some memory of their hostility, we may seek more or less unconsciously to reconcile them by an imagined harmony. We invent or we entertain the idea of some fancied situation, and, placed in this by a change or an addition of some element, our jarring fact undergoes an imaginary transformation, or at least tends, more or less unawares, to be ignored in a certain aspect. In this new complex, our contrary desires are both co-ordinated on equal terms, or again one of them becomes without negation in some way disregarded, or else taken as subordinate to and positively included in the other. Thus a man without conflict may desire both to remain in bed and to rise, because in some way his present does not come before him, altogether and without condition, as this 'now' that now is. Or dreaming of how things might have been if he had married the woman that now is his neighbour's, he may succeed unrebuked by his conscience in desiring her sinfully. What is done here is to imagine, more or less consciously, that some condition is added or removed, with the result that the case is altered, and is really no longer the actual case in hand. And so for the moment the incompatibility, though in truth unremoved, is removed from the view, and the confused whole can be desired without collision.[1]

(*d*) We may, however, led by willing insight or driven by hard experience, have been brought to perceive that our two ideas A and B are really incompatible. And (i), in the first place, we may have qualified A by the idea of negating B, either in part or entirely, without at the same time qualifying B's content by the negation of A. B may be unable even to suggest itself as the exclusion of A, or, if so suggested, it may be unable to maintain itself as A's negative. On the other hand A, in its character of superiority to B, may perhaps be forgotten, but can never be consciously driven

[1] *Cf.* here James, *Psychology*, ii., 565. With this mode of removing practical conflict we should, of course, compare the theoretical solution of contradiction by way of distinction and division. In connexion with the doctrine of the text I should add that I, of course, reject the doctrine according to which the real and the imaginary can for me be distinct without an actual difference in their contents. While, *e.g.*, I feel cold, I can certainly imagine that I feel warm, but certainly not without, in doing so, more or less abstracting from the conditions of my here and now. The widespread error on this subject makes, wherever it exists, a rational doctrine of belief and judgment impossible.

out or held in subordination by its opposite. And hence the conflict of desires is, under these conditions, at an end. For a desire in the proper sense is not present without an idea, and it is now impossible for the idea B to maintain itself in collision with A. B, in short, cannot as against A any longer appear as an independent idea. It can appear, but, where A is present, it can appear only as held in subordination to A. It is so far, therefore, a mere element included now in A's content, and hence we must say that, as the idea B, it has so far ceased to exist. On the other hand, there may remain (as we have seen) a group of excited feelings and movements, which, if it could gain an independent expression, would be once more this desire and this idea of A's contrary. We may recall the instance of the dog mastered but still hankering and licking his lips. So again in determinedly swallowing a nauseous drug there may be a struggle of hostile feelings and even movements. But so long as B, the idea of rejection, is not allowed to appear except as that which is to be and shall be crushed, it is held down as included in and subject to A, and hence, though in a sense averse, we actually have not the aversion B. It is so again when we start on some painful errand with the desire, first of all, to return home and to bid farewell. If this idea B, which in an independent form would be in actual collision with our starting, is subordinated to that idea, and appears but as a thing which under the conditions is excluded—we have again no conflict of ideas or, in the proper sense, of desires. We have at most a hindrance and a resistance of elements which, so long as they are prevented from taking a higher form, fall short of a conflicting desire.

But, before proceeding, I would advert to a common error. It is absurd in volition to talk about the prevalence of the stronger motive and idea, before at least we have tried to make ourselves aware of the ambiguity of these phrases. And even to inquire whether our action takes the line of the less or the greater resistance, is, I will venture to add, in principle irrational. It is to discuss a problem, which to say the least is not merely mechanical, with a mind biassed and in part blinded by physical metaphors. The defeated idea may survive, we have seen, in a mass of feeling hostile to our action. And in this case the volition may be made difficult, and the available energy lessened. But upon the other hand, the result of conflict may on the whole be quite different, and the resistance, we may fairly say, has gone to increase the positive force. It is after all the whole self, and not the mere balance of its contents, which is realised in the

act. And in many cases the excitement of the struggle, and even the very survival of the sensations and pains that belonged once to the defeated idea, pass to the credit of the idea with which the self is finally identified. The intensest volition, we might almost maintain, is that which has naturally developed itself from the smallest balance in the greatest sum of collision. Facts such as these will be for ever ignored by the crude gospel of Necessity, and for ever perverted into a plea for miracle by the blind apostle of 'Free Will'. They will be recognised as what they are by no one who has not rejected the prejudice on which both superstitions alike are based.

The idea B, though subordinated, as we saw, by its contrary A, may still be represented by a mental group which survives and struggles to restore it. And, where decisive action is impossible, this group is a persistent source of constant danger to A. For, though B still may be unable to assert itself openly against A in the character of A's opposite, it may none the less, if for some moment its subordination by A is forgotten, assert itself independently and positively. And the result of this will naturally be a desire, and perhaps an act, contrary to A. We have already glanced at this perpetual origin of insidious self-deceit. It may be dangerous, even where you honestly disapprove, to dwell too insistently on disapproval. For the constant negation of B by A is in a sense after all the continual repetition of B. And B is an element which, though subordinated, is perhaps for ever struggling to break loose and to appear and act independently. And hence your supposed repetition of B's subjection may unawares have passed into the habitual toleration of its presence. You tend in effect to lapse into the holding of both ideas as positive, coupled with the mental proviso that the one is taken really as subjected to the other. And from this basis B may in the oblivion of some moment have gone on to become independent unconditionally, and, before you can take warning, may have suddenly realised itself in an act.[1]

(ii) But in the end A and B may become qualified explicitly each by the negation of the other. Each may possess so much mental support, whether direct or indirect, that we may have been forced or led to recognise them as equal and conflicting alternatives. The idea and the desire B will now explicitly include not-A in its content, while A is determined in like manner by the exclusion of B. And a question, we saw, was asked as to what will result when both of these

[1] *Cf.* here MIND, N.S., No. 41, p. 25.

opposites are present. But we must meet this question, for the present at least, by denying the fact which it assumes. These moving ideas A and B cannot, while really taken thus as alternative, be present together, and we are able to think this possible only because we really do not take them as opposites. We, for the moment, may merely ignore their reciprocal exclusion, or we more or less consciously may fancy some wider arrangement in which they cease to conflict. But while each appears simply and unconditionally as containing the negation of the other, I am confident that both practical ideas, as ideas, do not come before us at once. Apart from some compromise, in which they are more or less conditioned and modified, they cannot each at the same moment be identified with myself. One will banish the other, or they will oscillate in a wavering alternation. This process will be painful because of the excited group which supports each desire, a group which, itself unbanished and unsubjected, throughout struggles blindly yet insidiously, and moves to gain expression in an idea and a desire, and so to dominate in its turn. The pain of oscillation will indeed itself be a further motive for the self to terminate the conflict, and, where immediate action is not possible, to attempt at least to silence one claimant by a resolve. But each excited group, while it remains, will seek to recommence its struggle for a voice, and in the end for a despotism. On the other hand, as powers that openly assert themselves each as the opposite of the other, they cannot in this character both rise above ground and appear at once as possessors of the self.

We have been led to enter on an old and well-known problem, the question whether a man can knowingly and willingly do what is bad. It is possible, of course, to answer this question in the affirmative, and to explain the admitted fact rationally by the psychical weakness of one contrary (MIND, No. 34). But, if our foregoing conclusion was correct, such an answer will not wholly stand. We must deny the possibility of a volition where opposite ideas are present together, if it is true that these ideas cannot co-exist where they actually are opposite. If 'bad' be taken explicitly as the contrary of 'good,' and if both ideas are understood simply and unequivocally and without mediation and qualification, 'bad' and 'good' cannot co-exist, nor can one of them be realised as against the other. And in the practical problem before us the meanings of 'good' and 'bad' are clearly fixed as so opposite. Since all will must be directed upon existence here and now, and is not possible except as a change in

and of that existence,[1] an act proposed to be done, whether good or bad, will be good or bad for me now and here. And the 'here' and 'now' will inevitably force these terms to conflict as alternatives. Hence, if our view is right, they will be unable, as practical, to appear both at once, and the assertion of bad against good must be pronounced impossible. We fail to see this because the opposition tends unconsciously to be modified. The bad will become perhaps merely bad for others or, again, for myself at another time and place, or it may come to mean no more than what in general the world would mistakenly call bad. And so understood, the bad has of course become compatible with the good. In the same way when a man exclaims 'Though I know it is bad, I still do not care,' or where he even experiences an added and evil pleasure in opposing goodness, he is after all not really doing the bad as bad. He is pursuing still and he always must pursue his own good. The bad in general, or bad for others, or bad conditionally, is now subordinated to his positive good, and is included in that. Wherever the opposite ideas, in short, are seen to be opposite unconditionally, there may be oscillation or extrusion of one by the other, but the presence of both practical ideas at once is not possible in fact.[2] We may conclude, then, that if I acted knowingly for the bad, the bad must *ipso facto* have become good, and otherwise (we shall hereafter see) the act would certainly not be my volition.[3]

[1] I shall deal with this point in a later article.

[2] I am, of course, following here, as every one must follow, Aristotle; but how far at the same time I may diverge from him I do not inquire. His "incorrigible man," at least as commonly understood, seems certainly an impossible monster.

[3] For this latter consequence see below, pp. 309-10. The reader may object that the doctrine of the text refutes itself by proving too much. By the same reasoning, he may urge, it would be impossible also to will the good knowingly as against the bad, and with this we should be brought into collision with a large mass of fact. The answer is that, if the bad were present with the good as its independent opposite, in that case you certainly could not act for the good. But when the bad is not so present but comes before you merely as negated by the good and as a subordinate element in that, the case is radically altered. You may reply, "But then the same thing will hold with the bad. Where the good as an independent positive idea is absent, the good may on its side be merely subordinate to the bad." Yes, but, I answer, you are now supposing what is downright impossible. The good, where I am conscious morally, cannot fail to be present as a positive idea. The good and the bad are certainly opposed, but none the less they do not stand on a level. The bad without the good would be nothing at all, but the good does not, except in a narrow and special sense, depend on the bad. The bad is, in short, essentially subordinate to the good. To call it a mere kind of

There is, however, a possible objection which I will briefly notice before we proceed. "If," it may be said, "you cannot have at once two alternative desires and ideas, surely this will mean that you are unable to think at all of any contrary alternatives, and such a doctrine, it is evident, you cannot maintain." To this I reply (*a*) that to entertain theoretically and to think of incompatible ideas is, in the first place, not the same thing as to have two such ideas tending to realise themselves as existences in our mental being. It is not even the same thing as theoretically to predicate these ideas of what we call *our* reality. That which makes an idea theoretical will tend to prevent its further realisation in existence. And that again which makes it a 'mere idea'—an idea, that is, which is not judged to be true of *our* world—will once more tend to separate it further from our psychical being. And the failure to perceive this is at once a common and most mischievous error. In the second place (*b*) when, without judging them to be true of our real world, we entertain the ideas of incompatibles and reflect on their nature, it is not the fact that, as we hold them before us, these ideas are wholly and barely incompatible. On the contrary, the idea of them as co-existing in this other world of mere thinking seriously modifies their nature. Their transference to this other world removes the point of union through which in our world they conflict, and by a change of conditions it so far makes them actually compatible. And the thought that, if this condition were removed, A and B certainly would clash, is not the positive maintenance before us of A and B immovably in a state of clashing. It is rather the idea of the exclusion of their collision by and from the 'real' world into another world where by a distinction this collision is prevented from taking place. With these too brief remarks I must pass from an important and wide-reaching subject.[1]

We have now to some extent examined the facts of mental conflict and of what may be called divided will. We previously, as the reader may recall, laid down those principles on which one idea is judged by us to be higher and to be more mine than another. And we may now proceed to the ques-

goodness would certainly not be correct, but that would be far less false than to speak of good and bad as being two independent positive kinds. But I cannot, of course, enter into such a large subject here. We should be led once more to think of the self-contradiction inherent in the bad, and again to reflect on the absurdity of assuming that every idea has a legitimate contrary.

[1] Cf. here MIND, N.S., No. 20, p. 482.

tion of imputation in connexion with the definition of will. But in speaking of imputation, I mean merely to consider the fact without inquiring how far it can be morally justified.

The results we have reached enable us to deal rapidly with the subject of action against will. We have seen that the alleged fact, as it was offered to us, does not really exist. If we use 'desire' in the proper sense in which it involves an idea, we cannot really have an actual conflict of opposite desires, and in the end we might insist that we cannot experience the presence of more than one desire at the same time. But apart from this we found at any rate that, while A not-*b* holds its place, we cannot have also the simple and unconditional appearance of B not-*a*. And, given two opposite ideas explicitly qualified as opposite, we certainly could not in fact go on to realise either in a volition. If, however, for the sake of argument we suppose that B (whether we take it as independent and merely positive or again as an independent B not-*a*) has actually realised itself in the presence of A not-*b*, that would be a case of volition. The act would be so far clearly my will, but for other reasons, we shall go on to see, I might probably disown it as really mine. But I must repeat that I cannot myself admit any such case to be possible.[1]

I am far from denying that, while the idea of A not-*b* is held fast, B in spite of this can in a sense realise itself and pass into act. In the case of abnormal ideas we must allow that, in a sense, this can happen. But, as soon as we consider the real sense in which it happens, we must deny that an act of this sort is a volition. The act would be a volition if B had broken loose from its subjection to A, and had come before us as itself positive and without any reference to A. But as long as B is held subordinate and does not appear except as negated by A, a different answer must be given. You cannot say that a subjected element contained within an idea is itself an idea proper. And since you, therefore, cannot assert that an idea has, in the proper sense, here realised

[1] The reader must bear in mind that this case supposes that both ideas are held to the last clearly each in its own individual character. If that character becomes obscured or confused, then, whatever else happens, the idea B certainly will not have realised itself as against A not-*b*. If the two alternatives or incompatibles come in the act before the mind as one inconsistent ideal whole, it is clear that such an idea as this is not the idea of either, and could not itself possibly pass into fact. The supposed case, in short, demands that each idea maintains its individuality and its relation to the other, and where, and so far as, these ideas work practically, I do not believe this maintenance to be possible.

itself, you by the definition are unable to affirm the presence of will. In such an act we no more have a volition than in an analogous case we should have a judgment. If, while mentally holding fast the idea A not-*b*, I were somehow to give utterance merely to B, that utterance would be no judgment nor the true expression of any idea really in my mind. And in the same way the escape into act of a subordinate element contained under an idea is not in the proper sense the realisation of an idea, and it is so, by consequence, no volition.[1]

Our conclusion, however, must be different if, as usually happens, there are opposing ideas which oscillate. In this case B for the moment may have broken loose from subordination to A, and may in its turn have subjected A to itself, or, as is more probable, for the moment B may simply have extruded A from the mind as an idea. Under these conditions, if B realises itself in act, we have clearly got a volition, and I do not know why we should hesitate to assert this confidently. How far that volition may on other grounds be more or less disowned as mine, is again a further and a different question.

As long as we keep to theory and confine ourselves to that which is in general true, we can deal more or less satisfactorily, I believe, with any case that can be offered. It would be far otherwise if we attempted to lay down rules by which to settle particular cases in practice. We have already noticed a class of actions which, in theory not puzzling, would prove really intractable by any rules of art. There are cases, we saw, where the collision has been more or less unconsciously and surreptitiously removed. Neither of the opposite ideas has here been forgotten or openly extruded, but one or both of them has in some way been so qualified that they are conjoined together in one whole, and now co-exist peaceably. The action that results cannot, of course, realise this inconsistent ideal whole, and the action, therefore, as failing at least in part to carry out its idea, will so far not be my will. If volition, it will be volition only to a certain extent, which

[1] The same, I would repeat, must be said of the realisation of one of the two struggling aspects of a self-discrepant ideal whole. That is not in any proper sense the realisation of an idea, and it is, therefore, not will. In order for the volition of B not-*a* in the presence of A not-*b* to happen, what would be required would be the maintenance of each idea as at once distinct and as related to the other. And we have seen that for a theoretical purpose these ideas can be so held before us. But the very condition which makes that possible is, so far as I see, removed *ipso facto* by the ideas becoming practical. In order to become practical they, in short, are forced in some way to change their character.

will be different in each case.[1] But to know in each case what was actually in the mind of the agent, to find the degree of his illusion, and to estimate his responsibility, indirect and direct, both by way of commission and by way of negligence, is not a possible achievement. And to draw up rules for constructing such an estimate would at best be pedantry.

I will add another instance of this difficulty, mainly because it tends to illustrate the account which I have given of will. If I have the idea of another person as performing a certain act or as being in a certain condition, and if then the act or the condition really follows in me, this, to speak in general, would not be a case of volition. And we must say the same thing if I merely imagine myself as being in a certain psychical state, and if my imagination is thereupon realised in fact. The result will in neither case be volition, and it will probably fail of being so in two ways. The result in the first place may not have followed as a genuine consequence from my mental state, and, if so, it cannot be the self-realisation of an idea. And, even if the result has so followed, it is still not a volition. For the idea of another's act, or the mere imagination of my own act, is obviously not that ideal content which the result has realised. For the idea in each case, as I held it, was modified by a condition which divided it from simple union with my self as existing here and now. And since this character is not and could not be carried out in the result, my actual idea has not been realised, and the result, therefore, is not will. That which has been carried out in act is no more than a partial aspect of my idea, and it therefore in the proper sense is itself no idea at all. On the other hand, if the qualification of my idea as alien or as imaginary for the moment lapses and falls out (and there is, of course, a tendency to this lapse), the case is altered essentially. The idea at once becomes a mere unconditioned idea of the result, and, if that result is as a direct consequence realised, we have genuine volition.[2] This distinction, taken in general, appears to be clear and simple, but to decide in

[1] The question would turn mainly, I presume, on the amount of connexion or disconnectedness between the elements of the ideal whole which is before the mind of the actor, and on what we are able to speak of there as one idea. We should also have to ask how far a volition can fail to realise itself and can yet remain a volition. This difficult question will be taken up in a later article.

[2] It may possibly be objected that, unless I also believe that the result will take place, that result is not volition. But unless the term 'belief' is improperly used here so widely that the objection disappears, I cannot assent to this doctrine. I shall return to this point in a future article.

detail on the point at which an idea has actually lost its qualification as merely alien or imaginary, might hardly be possible. And the attempt in such cases to estimate by rule the amount of my responsibility for the result, in the case of that result being unwilled, or again being willed, would at best be useless. It would probably end in that which has too deservedly given an ill name to casuistry.

We have seen the general conditions according to which the act which results from a mental conflict is either to be taken as a volition or disowned in that character. The alleged case of an idea realising itself openly in the face of its opposite we could not accept. It is not a fact, but is a very natural misinterpretation of fact. But, if the reader decides to regard it otherwise, the principles we have laid down will still enable us to deal with it. By these principles I judge ideas and desires to be higher and lower, and to be mine and not-mine, and I can apply these distinctions to the alleged case in two different ways. I may narrow the definition of will so that the case falls outside and can be disowned as volition. And, if so, will is "the self-realisation of an idea with which the self is identified, provided that this idea is not too much opposed materially or formally to that which is higher than itself and is essentially mine". In view of the ambiguity of language, such a proviso would, perhaps, be defensible, but for two reasons I do not propose to adopt it.

In the first place, I have convinced myself that the fact alleged is not really a fact, and in the second place, even if it were a fact, I consider that the proviso is not wanted. The idea realising itself openly against its contrary would in this case be a volition, and we certainly must go on to allow that this volition would be mine. But with so much the question is very far from disposed of. The act would be my volition, but it need not be my volition in the sense that I should impute it to my genuine self, and consider that I on the whole was accountable for its existence.

I am not inquiring here as to what in the end can be morally justified, and I am not even sure that such a question is able to be answered. I am asking merely about the way in which a man naturally judges concerning responsibility. And, when we view things so, we are led, it seems to me, to the following result. Human responsibility is not a thing which is simple and absolute. It is not a question which you can bring bodily under one head, and decide unconditionally by some plain issue between Yes and No. It is, on the contrary, if taken as a whole, an affair of less and more, and it is in the main a matter of degree. And not being simple, it

cannot be dealt with by any one simple criterion, but must be estimated, as we have seen, by several principles of value. It is indefensible to insist that I am absolutely accountable for all that has issued from my will, and am accountable for nothing else whatever.[1] If I have willed anything I am of course in a sense responsible for so willing, but what that amounts to on the whole is a very different question. Being so far responsible I may on the whole be so little responsible for the act, that without hesitation I disclaim it and disown it as mine. If an abnormal idea, foreign both to my natural self as a whole and to the self which I have acquired, becomes so intense as for the moment to extrude or master opposite elements, the result may be formally a volition; but to make me on the whole responsible for such an act would be barbarous pedantry. For legal purposes we are of course compelled to do the best that we can. We have to abstract from the individuality of each case, we are forced to apply hard distinctions and more or less to ignore what refuses to square with them.[2] But when we try to judge morally, no such abstraction in the end is permitted. And here the question

[1] This doctrine is open to question, not merely on its positive side, but also otherwise. To say that I am to think myself better or worse for nothing except what directly or indirectly has issued from my will, is to come into collision with a body of sentiment which is not easily repudiated. Any doctrine of this kind starts on a path which in the end leads to a choice between opposite abysses (*Appearance*, chap. xxv.). On this subject of moral responsibility I must be allowed here to protest against the assumption that it is tractable only when you introduce theistic ideas. On the contrary, I submit that it is precisely the intrusion of these ideas which has turned the question into a battle-field for rival dilemmas. For myself, when I am offered the idea of a moral creator who tries to divest himself by some ludicrous subterfuge of his own moral responsibility, or the idea of a non-moral potter who seems to think it a fine thing to fall out with his pots—when, I say, I am offered these decrepit idols as a full and evident satisfaction of the highest claims of the human conscience, I am led to wonder if the writer and myself, when we use the same words, can possibly mean the same thing. It is even a relief to turn back to the old view that the Deity is a person limited like ourselves, a person face to face with mere possibility and with chance and change, and in truth, like ourselves, in part ignorant and in part ineffectual. Such a doctrine, I readily grant, need not interfere with our human morality, but I must be allowed to doubt if those who more or less consciously would seek to revive it, can realise what it means. It would in the end leave the limited Deity together and along with ourselves in a Universe, the nature and sense and final upshot of which would in the end be unknown. I cannot myself admit that non-interference with our moral distinctions need be bought at the price of such ignorance. And there are also those who, accepting a more unlimited ignorance, would, in my opinion, be found in a less irrational position.

[2] Thus for criminal purposes, I believe in at least most codes, a man must be mad or not mad. But it is notorious that, apart from the

if an act is mine is very far from being simple. It must be considered from various points of view, and the answer, if we reach one, will be a conclusion drawn from more estimates than one. It will scarcely rid itself of degree and of 'more' and 'less,' and be able to arrive at a clear verdict of 'Yes' or 'No'.

There would be little advantage in our attempting to enter further into this subject, and I will end by repeating those principles which we laid down at the beginning of this article. (1) If I can bring and retain A not-*b* before my mind, and cannot do this with B not-*a*, A is so far higher and is so far mine more truly than is B. (2) The same conclusion follows if, taken on the whole, A is more pleasant than B, or less painful. And if any idea has moving force out of proportion to its pleasantness or, again, to its freedom from pain, that is, to some extent and so far as it goes, a sign of the idea's alienation. It is, so far as it goes, a reason for taking the idea as not genuinely mine. This is, however, a criterion which cannot be applied indiscriminately. In the first place, where an idea moves us at once and before it is attended to, the criterion seems inapplicable, at least directly. And the ground which is here excluded is really large. And in the second place we must lay stress on the words "taken as a whole". It is too commonly forgotten that, when we are moved, the facts are often complex, and that it is a question not of either pleasure or pain but of a mixture of both. Thus any idea, no matter how painful, will, if it remains held before us, produce a feeling of self-assertion with a tension against fact, and so to some extent must become pleasant. The view that a man can will that to which he is averse simply, or even in the proper sense averse actually, is in principle erroneous. And when Dr. Stout (*Manual*, p. 604) adduces fascination as an example of the first kind, I must consider this indefensible. For if fascination is used negatively for paralysis, there is no act, while if it is used positively for attraction, the presence of some pleasure seems even evident. (3) If A is the outcome of and represents something like a deliberate choice, while this is wanting in the case of B, B is so far the lower and the less mine. And similarly (4) if A appears as falling under a principle, while B is taken as under a principle lower and less general or as under no principle at all, A will again to this extent be higher, and will be so far more mine. (5) And last we come to that most im-

difficulty of such a clean division, moral responsibilty can exist among the insane in varying degrees. Responsibility in intoxication is again a well-known puzzle which law must cut with a knife.

portant criterion of all which consists in the material difference of content. If A represents some main interest of my being, and if this feature is not contained or is to a less extent contained in B, then, according to the degree in which it is more absent from B, B is so far lower and is not mine. I need hardly point out that this last principle has a very wide bearing. It is applicable where there has been no mental conflict, and where there has been no question about the presence or the absence of volition. And to some extent this remark will also hold more or less if applied to those criteria which precede. But to dwell on this point would perhaps not repay us.

Will may therefore be defined as the self-realisation of an idea with which the self is identified, and we have found no reason for restricting or for modifying this account. But the reader must remember always that a subordinate element contained in an idea has no right to be counted as an idea, if it is taken by itself. And in any case let us avoid anything like an appeal to an unknown Will. If we find facts which we cannot explain, let us by all means collect them and class them, and, if we think we are justified, let us again by all means set them down as inexplicable. But what in psychology is gained by referring them to an unknown power, by whatever name we entitle it, I am unable to perceive. On the other hand, I am persuaded that by our so doing a great deal may be lost.

II.—THE PHYSIOLOGICAL FACTORS OF THE ATTENTION-PROCESS (I.).

By W. McDougall.

It may perhaps be assumed that every sensible psychologist knows what he means by 'Attention' and even that the meaning of the word Attention, though so difficult to define shortly and accurately, is now pretty well a matter of agreement. The presentation attended to at any moment is the central object of mental activity, and the effect of attention being given to it is not merely or chiefly to give increased intensity and clearness to the presentation, though these effects are usually produced in some degree; but rather the essential effect is to give to the presentation increased '*Lebhaftigkeit*' and '*Eindringlichkeit*'. For these two German words, which so excellently express the facts, it is not easy to find English equivalents, but perhaps we may translate them as 'activity' and 'power of penetration' respectively. We might adopt as a definition Mr. Shand's statement "Attention tends universally to render the idea or sensation attended to more active, evoking such fusion and association as renders further understanding of the object possible".[1] But the definition given by Prof. Ebbinghaus is perhaps preferable, because it brings out the twofoldness of aspect that characterises every attention-process, namely, re-enforcement on the one hand and depression or inhibition on the other. It runs, freely translated, "Attention consists in some one psychical compound (*seelisches Gebilde*) coming into a state of lively and predominant activity at the cost of others, which also are striving to assert themselves in virtue of certain factors that tend to promote them," and again "Attention is the result of a process of selection; it consists in a narrowing or concentration of the mind upon a certain number of the sensations and images which the external conditions obtaining at any moment render possible".[2]

[1] "Analysis of Attention," Mind, N.S., vol. iii.

[2] *Grundzüge d. Psychologie*, Band i., s. 575.

The problems that must be solved, before a complete account of the attention-process can be given, fall naturally into three groups, which may be defined as follows:—

(1) (*a*) What is the nature of Attention considered as a state of consciousness? (*b*) What is the nature of the physiological state or process underlying this state of consciousness?

(2) What are the factors that play a part in bringing about the perpetually changing series of states of attention? *i.e.*, what are the factors that select one object from among many tending simultaneously towards the focus of consciousness and cause it to predominate and to occupy the focus to the exclusion of all others?[1]

(3) How exactly do these factors work?

To the first of these questions, (1) (*a*), a pretty complete answer can now be given; the problem has been solved by the purely psychological methods. Nothing of much importance remains to be done in this direction, though no doubt the terms of our definition, our account of attention as a psychical state or process, may be capable of further refinements, as has been shown by Mr. Bradley in his article in the last number of this journal.

As regards the problems of the second group some progress has been made. Probably all the factors that may be conceived to play any considerable part have been in some degree recognised and discussed. They may be briefly enumerated as follows:—

(1) A general awakeness of the mind[2] is the first condition of attention, and the higher degree of awakeness or general activity of the nervous system is the more favourable to attention.

(2) The degree of sensitivity of the sense-organs.

(3) The intensities of the stimuli playing upon the sense-organs.

(4) The relative novelty of these stimuli.

(5) Contrast, simultaneous and successive, between the stimuli.

(6) The motor adjustments provoked for the better examination of the object attended to, especially the adjust-

[1] I take it for granted that the obviously true doctrine as to the singleness of attention is that laid down by Mr. Bradley in his article 'On Active Attention' in the last number of this journal, and I do not propose further to discuss this point. See p. 20 *et seq.*, MIND, N.S., No. 41.

[2] I adhere to the usage of the words 'mind' and 'mental' suggested by me in a previous article (MIND, N.S., No. 25), *i.e.*, as covering all the functions of the central nervous system.

ments of the sense-organs, and the afferent impulses to which these adjustments give rise.

(7) The existence in the brain of physiological dispositions or mental systems capable of being excited to activity by the stimuli: (*a*) the size and vigour of these systems; (*b*) the recency of their excitement.

(8) The constellation of foregoing states of the mind, especially, of course, those associated with any of the presentations striving to occupy the focus of consciousness.

(9) As a special case of the last, of primary importance in voluntary sensory attention, an idea of the object or similar object already present to consciousness, a 'preperception' as Lewes has called it.

(10) The emotional interest that the objects are capable of arousing, *i.e.*, their affective value.

(11) Fatigue of parts of the mind or of certain constituents of mental process.

(12) Vascular changes.

(13) Voluntary effort.

(14) The inhibition or depression of all mental processes save those concerned with the object of attention. This factor occupies a very special position as it is properly the correlate of the re-inforcement of the one presentation by some or all of the other factors, just as the negative pole of a magnet is the necessary correlate of the positive.

(15) A peculiar self-determining activity of the soul that can, as it were, give the casting vote and turn in this way or that the balance of the effects of the other contending factors.

As to this last factor, it may be confidently asserted that its reality can be neither established nor disproved by any expression of opinion however pious or philosophical, and that we can obtain evidence for or against the reality of this factor by one method only, namely, by the method of residues, that is to say, by the elucidation of the workings of all other factors and the demonstration that, when in any particular case their effects are fully allowed for, there still remains, or does not remain, an inexplicable factor through the influence of which the direction of attention is other than the resultant of the influences of all those known factors. We may therefore profitably leave the consideration of it on one side until such time as our knowledge of the other factors shall have made immense progress, merely keeping our minds open to the possibility of its reality.

Voluntary effort, though a factor of immense importance, is but a special complication of passive, spontaneous, or non-

voluntary attention,[1] and may also with advantage be left out of consideration as far as possible until the other factors shall have been elucidated, except in so far as the consideration of it will aid us in this task.

Of the other factors enumerated above it will be generally agreed that all play some part in different cases of attention. But as to the relative importance of these factors the greatest possible diversity of opinion prevails among authors, many authors assigning almost exclusive importance to one or other of them. And this must continue to be the case until we shall have made considerable progress with the third group of problems defined above, *i.e.*, until we shall have gained a much clearer insight than we at present possess into the mode of action of these factors. As to this last problem, which after all is by far the most important and essential of the three, it is no exaggeration to say that the attempt to solve it has as yet hardly been begun.

In dealing with the former part of the first problem, the definition of attention as a state of consciousness, the purely psychological methods sufficed, physiological considerations could be, and were, dispensed with as of little or no importance. As regards the second problem, our present very imperfect knowledge of the factors, the detection and partial definition of them, has also been achieved very largely by purely psychological methods. But for the solution of the third problem, and therefore for further progress with the second, physiological considerations are of the first importance. Perhaps no other problem presented by the mind so well illustrates the limitations of the purely psychological methods; and it is, I think, pretty clear that psychology if, in face of this problem, it disdains the aid of physiology, or from considerations of method rejects physiological implications, must remain for an indefinitely long time as it now is, *i.e.*, in almost complete ignorance. As Dr. Stout says: "We need some certain and definite physiological doctrine before we can make any secure advance on the psychological side".[2]

This is now very generally recognised, so much so that it is becoming usual for the psychologist to conclude his chapter on attention with some reflexions on the present unsatisfactory state of neurology. So far so good. It may

[1] Dr. Stout and Mr. Shand have distinguished voluntary, non-voluntary and involuntary attention. It is difficult to understand why Mr. Bradley has ignored distinctions so clear, useful and indisputably valid and has chosen to confuse the terminology once more in his recent article.

[2] *Analytic Psychology*, vol. i., p. 223.

be hoped, however, that this is but a preliminary step to the realisation of the fact that the pure psychologist must cease to be content with a one-sided and partial study of mental process and that, if he wishes to advance his science, he must descend into the dark places of physiology and become himself a neurologist. The pressing need for such all-round study of mental process is revealed by a review of the treatment of this third and most important group of the problems of attention by those who have approached them from the physiological and psychological sides respectively.

If we turn first to physiology and inquire, What has been contributed by it directly towards the solution of the problems of attention? we find that it is extremely little. So far as I can discover, all physiologists, in writing of the workings of the nervous system, have been content to regard attention as a faculty of the mind, quite in the old style. This does not necessarily mean that they regard it as a metaphysical entity, or even as anything incapable of being described in terms of physiological processes, but rather that, having no insight into it, they are content for the present to accept it as an unanalysed special form of mental activity whose effects may be invoked in explanation of various phenomena. Thus, Helmholtz is content to explain many of the phenomena described in the *Physiologische Optik*, by invoking the aid of Attention, and when he has done so he does not then seek to drive his explanation farther back. His treatment of the predominance of contours in the struggle of the two visual fields may serve as an instance; his explanation consists simply in the statement that the contours draw the Attention to themselves.

The most thorough and penetrating attempt to describe the physiology of mental processes is Prof. Exner's *Entwurf zu einer physiologischen Erklärung der psychischen Erscheinungen*.[1] Valuable and illuminating as is this work throughout, we find that, in his chapter on Attention, Exner like Helmholtz accepts Attention as an influence mysteriously given from above, and seeks only to explain how, this influence being given in this or that direction, it affects the workings of the lower nervous centres. In this respect the diagrams in the book are illustrative of Exner's procedure throughout; all the lines representing paths of communication of the lower centres with the higher parts of the brain begin abruptly on the upper part of the page and run down-

[1] Vienna, 1894.

wards to the lower centres that they have to influence, like so many telegraph-wires coming down from heaven.

Again, in that very interesting recent work by Prof. Goldscheider, *Die Bedeutung der Reize in Lichte der Neuronlehre*,[1] we find a similar attitude adopted towards Attention; it may be well illustrated by the following quotation: "The relation of hyperæsthesia to the attention is a reciprocal one; the hyperæsthesia draws the attention to the disturbed part by means of the strong and unaccustomed sensations, and the attention in turn increases the hyperæsthesia, and is indeed capable of inducing hyperæsthesia. In what attention consists we do not know, but it is certain that it is capable of intensifying sensations."

Of the psychologists proper who have dealt with these problems Prof. G. E. Müller did pioneer's work[2] many years ago, but at the time his paper was written comparatively little was known of the structure of the nervous system, and Müller himself would presumably regard the views advocated as in need of much modification. The central idea insisted upon was that voluntary attention consists in the favouring or augmentation of one group of nervous excitations out of all those obtaining at any moment, so that they act with greater vigour upon the soul, this being effected by adjustment of the sense-organ concerned, and by a voluntary excitement of those sensory paths by means of which the stimulus attended to is brought into relation with the soul.[3] Müller treats very shortly of non-voluntary attention, and distinguishes five factors that by favouring any one sensory impression may cause it to act upon the soul to the exclusion of others and so be attended to, namely, intensity, suddenness, and large spatial value of stimulus; the likeness of the sensation, that the stimulus seeks to produce, to the idea present to the soul; the previous excitement of ideas associated with the sensation.

Prof. James[4] makes the cheery statement that two physiological processes seem capable of giving a complete explanation of the intimate nature of the attentive process, namely, adjustment of the sensory organs, and the anticipatory preparation from within of the ideational centres concerned with the object; and he casually mentions inhibition as a third factor of little moment. This is exactly Müller's doctrine over again. Now it is undoubtedly true that these two

[1] Leipzig, 1898.

[2] *Zur Theorie der sinnlichen Aufmerksamkeit*, Leipzig, 1873.

[3] *Ibid.*, p. 48, etc.

[4] *Principles of Psychology*, 1891.

factors are of primary importance in the very special case of voluntary, expectant, sensory attention. But this being granted, very much of the intimate nature of the process remains unexplained even in this very special case. To mention only two points, Why can we attend to the one object only? Why can we not continue to attend to the one object in one way for more than a moment? A still more important deficiency of this 'complete reply' is the fact that the essential problem of the determination of the direction of attention is avoided by assuming the direction to be given by an act of will; and later in the chapter James shows that he has not fully grasped the nature of the problems to be solved by offering, as alternative views of the process of determination of direction of attention, the assumption of an undetermined activity of the soul and the view that "Attention only fixes and retains what the ordinary laws of association bring 'before the footlights' of consciousness". Now it is just this assumption of the all-sufficiency of the ordinary laws of association to account for the direction of the movements of attention that has obscured for so long the essential problems.

Prof. Münsterberg, in his chapter on the association-theory,[1] very rightly insists on this insufficiency of it to account for the movements, the direction and the scope of mental process. He points out that this insufficiency of the association-theory has provoked by a natural reaction the theory of apperception, in the sense of an undetermined activity of the soul, and he proclaims that what is sorely needed is a theory that shall so supplement the association-theory as to enable it to deal with all those features of mental activity which this apperception-theory would remove from the reach of our understandings. He writes: "On the one hand we have still no physiological substratum for those variations of the psychical element which are not included in the changes of kind and strength; especially the change of activity (*Lebhaftigkeit*) from the penetrating power (*Eindringlichkeit*) of that to which attention is directed down to the disappearance point of that which is inhibited, is still without physiological basis".[2] And again: "On the other hand we still lack an insight into the mechanism which achieves the selection of the psycho-physical excitations".[3] Which two defects he sums up in the phrase "Wir entbehren eine Psycho-physik der Lebhaftigkeitswerte". Münsterberg then develops his '*Aktions-*

[1] *Grundzüge d. Psychologie*, Leipzig, 1900.
[2] *Op. cit.*, p. 525. [3] *Op. cit.*, p. 526.

theorie' which is essentially a theory of attention. He assigns, as the physiological equivalent of the *Lebhaftigkeit* of any presentation, the energy of the efferent outflow of the excitation-process from the parts of the brain concerned: "Je vollständiger die Entladung, desto lebhafter die Empfindung". He then points out that practically all motor mechanisms are grouped as pairs of antagonists, the activity of one member of each pair tending to inhibit the activity of the other member of the pair, and proceeds: "The 'action-theory' assumes, now, that this undeniable opposition of motor functions is the real basis for all reinforcing and inhibiting, facilitating and blocking, in short, for all antagonistic functions of the nervous system, and so all strengthening and suppression, selection and diversion of the psycho-physical processes rests upon this opposition of motor activities".[1]

Now, while we may agree that here is a possible explanation of the inhibitory aspect of attention, it is not easy to see that the reinforcing aspect is accounted for; in fact reinforcement becomes merely a negative function, it means merely the absence of inhibition.

Again, my observations on the mutual or reciprocal inhibitory actions of visual images[2] seem to show that relations of inhibition and antagonism between the nerve-processes are not confined to those of the motor side of the nervous system.[3] It is a further objection to this scheme that it would seem to account for inhibitions within closely allied groups of activities only, and it is difficult to see how it can be extended to explain inhibition exerted by a process in one sense-province on one that tends to occur in a different sense-province and to give rise to a motor outflow directed towards a completely different group of muscles. Again, there seems to be no sufficient place in this scheme for the indisputably important part played by mental dispositions or systems in determining the direction and the degree of attention, and no place for the influence of the constellation of foregoing ideas and images.

Another very serious objection to this theory is that it assumes that the excitation-process, set up by any stimulus applied to a sense-organ, flows through the same system of conduction-paths, whether the impression be attended to or falls in the field of inattention. And an equally serious objection may be stated as follows: Since *Lebhaftigkeit* is

[1] *Op. cit.*, p. 534.

[2] MIND, N. S., vol. x.

[3] Similar evidence has been brought forward recently by Dr. G. Heymans in his papers, "Untersuchungen ü. psychische Hemmung," *Zeitschrift f. Psychologie*, Bd. 21 and 26.

regarded as a function of the ease with which the excitation-process passes through and out of the cortical conduction-paths into the subcortical motor centres, and since a process, when through repetition it becomes automatic and ceases to be accompanied by clear or lively consciousness or to be easily inhibited by other activities, is certainly carried on easily and in relatively unobstructed paths, Münsterberg is driven to make the unwarranted assumption that all automatic processes are subcortical, that when a process becomes automatic it is in every case because new paths have been formed in the subcortical regions, by which paths the whole process is effected, the cortical paths ceasing to be excited. Now, while it is impossible to deny that this may be the nature of the process of becoming automatic in some cases, especially perhaps in those simplest instances presented by reaction-experiments, it is, I think, impossible to accept it for all or most cases. I have argued this point in a previous paper[1] and will not dwell on it here, but will mention only two objections. In the first place, we have not in the subcortical regions, mapped out as they are into reflex and instinctive mechanisms, a sufficient anatomical basis for the carrying out of such an immensely complex process as the playing of a complicated piece of music by a practised pianist, his movements being guided by a rapid succession of complex visual, auditory, and kinæsthetic impulses, and yet this process may by much repetition become automatic. Again, the evidence afforded by lesions of the cortex is all against this view. When the so-called motor-cortex has been removed, skilled acquired movements are lost; and even in animals, whose skilled movements are mostly inherited, an effect of this sort is perceptible; yet every highly skilled movement is, in large part at least, automatic. Münsterberg is fully aware of this necessary consequence of his theory, and therefore asserts, that "so long as the excitation must really pass to the cortex it will never become unconscious even through the most frequent repetition".[2] For this sweeping statement he adduces no tittle of evidence, nor do I believe that any evidence can be found to support it. It is on the contrary in flat contradiction to the well-grounded views of physiologists, and instead of detailing the evidence I will simply refer the reader to section vii., chapter ii., of the third volume of Sir Michael Foster's *Text-book of Phy-*

[1] "Contribution towards an Improvement in Psychological Method," MIND, vol. vii.

[2] *Op. cit.*, p. 542.

siology (seventh edition) which will repay a careful perusal in this connexion.

In discussing the mechanism of automatic actions, towards the close of this section, Foster and Sherrington make the following deliberate and well-weighed statement: "All the arguments which go to show that the distinctly conscious voluntary skilled movement is carried out by help of the appropriate cortical area, go to show that the cortical area must play its part in these involuntary skilled movements also. So that, as indeed we have already hinted, distinct consciousness is not a necessary adjunct to the activity of a cortical area."

Münsterberg's theory of the physiological mechanism of the attention-process is then in flat contradiction to the well-founded and decided views of physiologists. But it is not to be supposed that this fact will weaken the faith of its author in its validity. For Münsterberg takes a very high line in regard to physiological details, and in his view apparently it is the part of the psychologist to stride on ahead, guided only by the pure light of deductive logic, while the physiological facts must come tumbling after and fit themselves to his demands as best they may; it would seem in fact that, as he asserts in another connexion, "In this sense the facts must order themselves according to the theories and not the theories according to the facts".[1] Münsterberg even warns psychologists against the danger of concerning themselves too much with physiological and histological facts; and accordingly he explicitly refuses to attempt any definite view of the nature of the inhibitory process, and he writes very loosely of *Entladung* without attempting to define what it is that is discharged or from what place or structures the discharge takes place. Nevertheless he takes it for granted that the inhibition of an efferent discharge-process consists in a blocking of the outlets by which the discharge tends to take place, thus making another unwarranted physiological assumption which I shall have occasion to dispute at a later stage of this essay.

And Münsterberg's assumption of a logical superiority of standpoint that raises him above the need of closely adjusting his theories to physiological demands seems particularly unjustifiable in face of the fact that most of what is new and suggestive in his '*Aktions-theorie*' is due to the direct application of recent physiological discoveries, namely Prof. Sherrington's discovery of the relations of reciprocal innervation' of antagonistic muscle-groups.

[1] *Op cit.*, p. 406.

I venture, therefore, to protest against this high and mighty attitude of the psychologist towards physiological details. To my mind there is something a little absurd in the exalted opinion of the capacity of the human intellect that Münsterberg seems to share with most philosophers. If we accept the doctrine of biological evolution, must we not regard the human mind as an instrument developed for the better dealing with practical difficulties of the bread-and-cheese order? How then should it be capable of going before the facts otherwise than in fear and trembling and in all humility? Were it not better that even the psychologist should place his chief reliance on the inductive method? And this my somewhat Philistine attitude is but confirmed by the perusal of this brilliant volume, for it appears that the validity of the author's way of looking at matters psychological is contingent upon our lack of an instrument that would enable a man to view his own brain-processes, and that, so soon as an instrument shall have been devised by means of which this feat can be accomplished (which may well happen at any time in the next hundred years) Prof. Münsterberg will have to pack up his psycho-physical parallelism and all his logical demands and will have to set out to seek a new philosophical standpoint. (See pp. 424 and 426.)

One other attempt to express the nature of the physiological state correlated with attentive consciousness must be noticed. In the just now published second half-volume of his *Grundzüge der Psychologie*, Prof. Ebbinghaus devotes five pages to the consideration of this problem. The essence of his suggestion is that the idea, the preperception of James and Lewes, involves the excitement of a definite path or system of paths in the cerebral cortex, so that on the incidence of an appropriate sensory stimulus the excitation-process confines itself to the relatively narrow and well-defined conduction-path while in the absence of such conditions favouring the concentration of one group of excitation-processes, the various groups of excitation-processes act upon one another by facilitations and inhibitions to produce a diffuse and ineffective excitation of an ill-defined area of the cortex.

This review[1] of the attempts that have been made to

[1] No review of contributions to the physiology of attention should omit to make mention of the valuable but very partial views of Prof. Ribot, and of Dr. H. Lange, but I have not thought it necessary to consider their views more nearly because these authors have not attempted to deal with the physiological processes in the intimate way that seems essential if further progress is to be made, partly also because I shall

elucidate the intimate nature of the physiological factors of the attention-process, brief and imperfect as it is, will yet suffice to show how extremely little progress has yet been made and to emphasise the fact that the first step must be to form a conception, as clear and definite as possible, of the physiological state underlying attentive consciousness, to translate, in fact, our psychological definition into physiological terms. And any such attempt must start almost 'with a clean slate,' for the physiologists have not yet seriously concerned themselves with the problem, and, of the few suggestions from the side of the psychologists, Münsterberg's, as we have seen, appears to be untenable, while those of Ebbinghaus and of James, though undoubtedly on the right lines, are very vague and carry us but a little way, in fact hardly advance us beyond the doctrine set forth by Müller at a time when our knowledge of the anatomy and physiology of the nervous system was relatively meagre.

This question, like most other psychological questions, has suffered much from the neglect of authors to make themselves clear as to the meaning of the terms they use, especially as to whether the terms used denote purely psychical, or purely physiological processes and states. In order to avoid this source of confusion, as far as in me lies, I declare at the outset that I accept, and shall speak in terms of, the hypothesis of interaction between psychical and physiological processes. Of course, if one accepts the now so popular hypothesis of psycho-physical parallelism, one may hope, and must strive to bring it about, that the whole of the factors of the attention-process may be described in physiological terms; but if we accept "interaction" and believe that there are psychical effects produced within the soul by interaction of the processes determined in it by physiological processes, we must still regard the elucidation of the physiological factors as our first business. For the occurrence of modification of the physiological processes by the reaction of psychical processes upon them can only be established by that method which I have spoken of above as the method

have occasion to refer to them later. I have said nothing of Prof. Wundt's theory because it seems to me that what is sound in that theory, namely the reinforcing influence assigned to the afferent impulses from the muscles concerned in adjusting the sense-organs, is common to many authors, while the characteristic feature of the theory, the assumption of an organ of apperception of which the essential function is the physiological inhibition of all excitations save those concerned with the object attended to, this assumption of an organ of inhibition seems to me to be exactly parallel to the old-fashioned assumptions of mental faculties as principles of explanation and to be subject to all their disabilities.

of residues; just as we can only establish or disprove the occurrence of an undetermined activity of the soul by first discovering all other factors, and then showing that there remains, or does not remain, an inexplicable residue, so we can hope to prove the reality of a determined activity of the soul, (*i.e.* an activity, proceeding according to its own peculiar but definite laws, by which it reacts upon the physiological processes), only by elucidating first the purely physiological factors, showing then that the effects are not completely accounted for, and that there remains a residue of effect that can only be explained by the assumption of a true psychical activity.

I shall therefore confine myself in this paper to the attempt to throw light on the physiological factors of the attention-process, and I shall deal chiefly with the processes of non-voluntary sensory attention, for this is, as Prof. Ribot writes, "the true, primitive and fundamental form of attention".[1] As I have shown above, we have as yet no satisfactory account of the physiological state that underlies the state of attention, the psychological description of the state has not been translated into physiological terms.

Such a translation, the drawing up of a clear and definite working scheme of the physiological state, must precede any attempt to describe the factors that are concerned in bringing the state into existence. When I first set myself to this task I was confronted with the necessity of undertaking a further preparation of the ground; I realised that it was necessary to formulate some definite view of the nature of neural processes in general, a view that should be as far as possible in harmony with all the physiological data and that should lend itself well to the description of the states and processes underlying our states of consciousness. For it is unfortunately true that no such view has been generally accepted by physiologists, nor have I been able to discover that any such view has been even formulated. Physiologists, as it seemed to me, have been too intently occupied with the attempt to exhibit the relation of nervous processes to the physical processes that occur outside living tissues and that have been so successfully studied, and there seemed to be urgent need of a scheme which, accepting the essential form of energy developed in neurones as *sui generis*, should describe it as fully as possible in terms of its own behaviour.

I have therefore proposed a scheme of this nature in a

[1] *Psychology of Attention*, p. 2.

paper recently published,[1] and I must ask to be allowed to refer the reader to that paper for the physiological, histological and other experimental evidence on which it is based and for the separation of fact from fable, which I do not stop to indicate here. Here only a brief outline of the scheme need be given. My scheme extends to the cell bodies of the neurones and to all their processes the 'theory of similarity of function' that is accepted by most, in fact by almost all, physiologists as true for their axis-cylinder processes;[2] and it assigns to the intercellular substances which, lying between the terminations of fibrils of different neurones or between such terminations and the bodies of other neurones, constitute the most essential parts of the synapses (or junctions of neurones), all those specific changes which are the psycho-physical processes proper, the immediate physiological correlates or determinants of psychical effects; and it regards them also as the principal seats of those resistances, varied and variable in degree, which determine the passage of the excitation-process in this or that direction and confine it to relatively well-defined and narrow paths among the labyrinth of innumerable paths possible to it in the absence of such limiting resistances. In brief outline the scheme runs as follows: The constituent neurones of the nervous system with all their branches are regarded, '*in primitivster Weise*' as Münsterberg says, as a vast system of channels in all parts of which potential chemical energy is constantly being transformed, in virtue of the normal vital activity of the neurones, into a peculiar form of active energy. This energy, which in the present state of our ignorance, can be most profitably regarded as a fluid, tends always to flow, like heat, electricity or water, from places of higher to places of lower potential, following the paths of least resistance, and for convenience of description it may be called 'neurin'. Under the influence of stimuli the neurones generate neurin more rapidly at a rate proportional to the intensity of the stimulus. In the sensory neurones, which, being connected with the surfaces of the body or with muscles, tendons, joint surfaces, etc., within it, are perpetually played upon by stimuli of varying intensities, the potential of neurin is maintained at a relatively high level, while from the motor neurones it escapes readily

[1] "The Seat of the Psycho-physical Processes," *Brain*, Winter 1901.

[2] A distinguished exception is Prof. Hering who in a recent pamphlet (*Zur Theorie der Nerventhätigkeit*, Leipzig, 1899), advocates a view the extreme opposite of this one; while he would attribute 'specific energies' to all neurones and to all their parts, I would assign them to the intercellular substances at the synapses only.

into the muscles, acting upon them as a stimulus to increased metabolism; therefore neurin flows perpetually through the intricate labyrinth of paths that constitutes the central nervous system from the afferent towards the efferent neurones. But the channels along which it has to find its way are not completely or equally open; while each neurone presents throughout its length, dendrites, cell-body and axone, an open channel offering no resistance, each is separated from all others with which it is functionally connected at synapses by an intercellular substance which presents a certain resistance to the passage of neurin from one neurone to another. In the resting state, as during deep sleep, neurin flows slowly and equally through all parts, maintaining in some degree the tonus of the nervous and muscular systems, and escapes across the resistant synapses by a sort of leakage. But, when a definite supraliminal stimulus is applied to a sense-organ, the sensory neurones affected by it produce neurin much more rapidly than it can escape by leakage across their efferent synapses, so that the potential of their charge very rapidly reaches what may be called the level of the threshold of the synapses, *i.e.*, it reaches such a degree that a rapid discharge of neurin takes place through the intercellular substance of the synapses into efferent neurones,[1] *i.e.*, into neurones of the second of those several layers in which the neurones leading from sensory to motor organs are arranged. The sudden arrival of the charge of neurin in neurones of this layer acts upon them in turn as a stimulus to the rapid production of neurin, so that they in turn become rapidly charged up to the level of the threshold of their efferent synapses and in turn discharge themselves into neurones of the third layer, and so on, until the neurones of the motor layer discharge themselves into the muscles and so bring about a contraction. If the stimulus continues to excite the same sensory neurones this whole process of charging and discharging of the chain of neurones is repeated again and again at very short intervals of time, in the case of the motor neurones at intervals of about one tenth of a second, at considerably shorter intervals in the case of the sensory and central neurones. An important factor in maintaining the onward flow of neurin from sensory to motor side is the valve-like nature of the synapses in virtue of which they permit the discharge of neurin in the

[1] It is convenient to speak of each neurone in any chain of neurones forming a conduction-path from sense-organ to muscle as afferent to its successor and as efferent to its predecessor in the chain.

forward direction only, *i.e.*, from a relatively afferent to a relatively efferent neurone, and not at all, or only under exceptional conditions, in the reverse or backward direction. And to the passage of the discharge in the forward direction the synapses present very various degrees of resistance, or, as it may be more conveniently expressed, they have thresholds of very different values.

The normal degree of resistance offered by the synapses of any conduction-path is the expression of what may be called the degree of organisation ('*Ausschleifung*' of German authors) of that path, organisation being the more or less permanent effect of repeated activity of the path; that is to say, each passage of the discharge across a synapsis results in some diminution of the resistance offered by it, in a lowering of its threshold. The paths of the highest degree of organisation are the old-established reflex conduction-paths of the cord and subcortical centres in general, while those of successively higher levels are, roughly speaking, of lower and lower degrees of organisation, *i.e.* are composed of neurones connected together by synapses of higher degrees of resistance. Every synapsis has thus a certain normal threshold-value in the unexcited state of the conduction-path of which it forms a part, which value has been determined by the history of that synapsis in the individual and in the race. But the threshold-value of any synapsis varies from moment to moment according to the state of the neurones between which it forms a link. When their vital activity is at a minimum, and the potential of the charge of neurin in them therefore also at a minimum, the resistance of the synapsis is at its highest; but any increase of the potential of the charge of neurin in either neurone, that on the afferent or that on the efferent side of the synapsis, so affects the intercellular substance as to diminish its resistance, *i.e.*, the threshold of the synapsis is lowered in proportion to the potential of the charge of neurin in either neurone, so that as this potential rises the synapsis-threshold is depressed to meet it, as it were. And when the discharge or series of discharges has taken place the threshold returns nearly *but not quite* to its former resting value. The synapses of highest resistance are those of which the thresholds are subject to the greatest variations of level produced in this way, while those of which the resistance is normally low can be subject to such changes in a much less degree only.

Besides these frequent and rapid variations of the threshold-values of the synapsis, produced by the variations in the potential of the charge of neurin in afferent or in efferent

neurone, or in both, there occur other considerable variations due to changes in the intercellular substance produced by fatigue, by drugs, and probably by changes in the state of the circulation and in the character of the blood.

It will be seen, then, that this scheme is an attempt to develop and to render more definite that view of neural process which Prof. v. Kries[1] has well called the 'conduction-hypothesis' in distinction from the other widely accepted view, the hypothesis of the individual psychical functioning of the bodies of nerve-cells. According to this scheme every psychical state corresponds to the flow of neurin through a certain set of neurones which form a group of conduction-paths leading towards the motor organs, which paths may lie in widely separated parts of the central nervous system and together form a complicated pattern in three dimensions of space, a pattern that continually changes from moment to moment as the stream of consciousness changes; and of the total process the immediate correlates or determinants of consciousness, the physical processes in direct interaction with the soul, *i.e.*, the psycho-physical processes, are processes that occur in the intercellular substances at the synapses as neurin is discharged through them from afferent to efferent neurones. The discharge of neurin through each of the synapses of those parts of such a complex system of paths which lie within the cortex of the cerebrum contributes a specific element to the total state of consciousness, an element that may perhaps vary in intensity but is constant in quality.

This scheme is based on physiological facts, many of which are detailed in the paper mentioned above,[2] and I hope to be able further to justify it by showing that it is well suited to aid us in the description of the physiological changes involved in mental processes.

I would point out that my conclusion as to the seats of the psycho-physical processes is not an essential part of the scheme, so that, if that conclusion be rejected, it will still be necessary to regard the synapses as the seats of those variable resistances which define and regulate the paths followed by any excitation-process, the scheme may still serve as a useful instrument of description, and the validity of most of the following descriptions will not be diminished.

When the above view of the nature of neural process is

[1] *Über die materiellen Grundlagen der Bewusstseins-Erscheinungen* Leipzig, 1901.

[2] *Brain*, 1901.

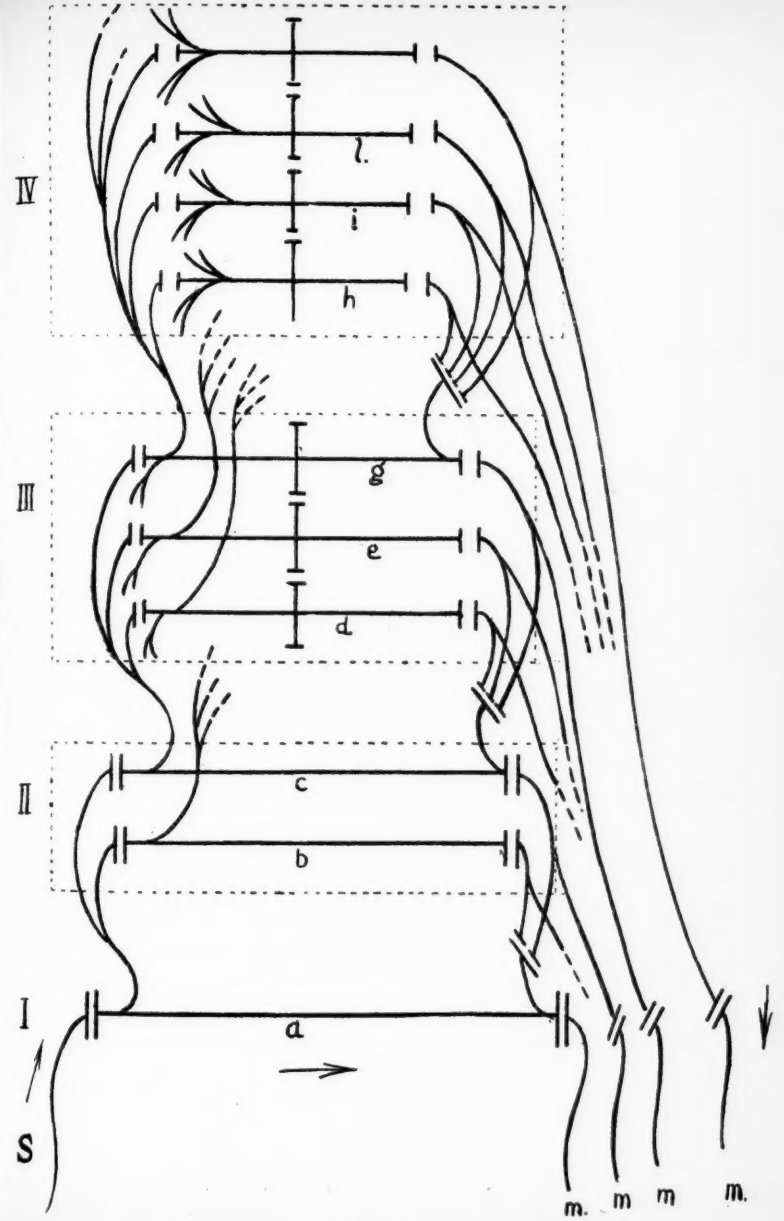


FIG. 1.

Diagram to illustrate the number and relations of the various paths within the brain, through which the excitation-process, initiated in the sensory neurone S may propagate itself to various motor neurones M, M.

combined with the current view of the anatomical arrangement of neurones and chains of neurones, we see at once the outline of the physiological definition of the state of attention. The neurones of the whole nervous system may be regarded as arranged to form series of superposed arcs, *i.e.*, conduction-paths of different levels leading from sensory to motor neurones. Of such levels Dr. Hughlings Jackson distinguishes three, and Prof. Exner[1] also distinguishes on physiological grounds three well-marked levels, besides minor varieties of reflex action, according to the degree to which consciousness is affected. These levels, with the exception of the two lowest, are not capable of accurate anatomical definition, but we may justifiably and profitably regard them as perfectly distinct layers or planes, and for psychological purposes we must assume, I think, at least four such levels. The lowest level may be taken to include all the spinal and subcortical centres, the second to include those parts of the cerebral cortex which Prof. Flechsig[2] distinguishes as the sensory areas, while the higher-level paths must be assumed to be the chief constituents of the parts which are distinguished by the same authority as the association-areas. We may then adopt as the simplest possible working scheme of the nervous system that represented diagrammatically in figure 1. In this are indicated the various paths of four levels by which the excitation-process initiated in one sensory neurone S may find its way to the muscles. And, since it is essential, in thinking of the nervous system, to visualise in three dimensions of space, I have enclosed the neurones of each of the levels within a dotted line, each area so enclosed representing a plane that in a three dimensional diagram would be perpendicular to the plane of the paper. Each neurone is represented by a line joining two terminal strokes, and the apposed pairs of such terminals represent synapses. The value of the resting threshold of a synapsis is represented by the length of these strokes, the longer stroke representing the smaller degree of resistance and conversely. The lines joining any neurone obliquely represent afferent collaterals or other paths by which it may be excited through other sensory neurones than that one S in the diagram. The explanation of the significance of the short lines perpendicular to the bodies of the neurones will be found on page 345.

This diagram illustrates the following points:—

(1) A given sensory stimulus may excite any one or

[1] *Entwurf z. phys. Erklärung psych. Ersch.*, chap. ii., §5.

[2] *Die Localisation der Geistigen Vorgänge*, Leipzig, 1896.

more of a large number of different conduction-paths, and so may lead to a corresponding number of different motor outflows.

(2) The same motor outflow may be occasioned by various sensory stimuli.

(3) The excitation set up in any sensory neurone may penetrate to paths in any one of the four levels.

(4) The higher the level the greater is the number of possible paths.

(5) The higher the level of a path the higher is the resting threshold of its synapses, *i.e.*, the higher is its resistance in the resting state.

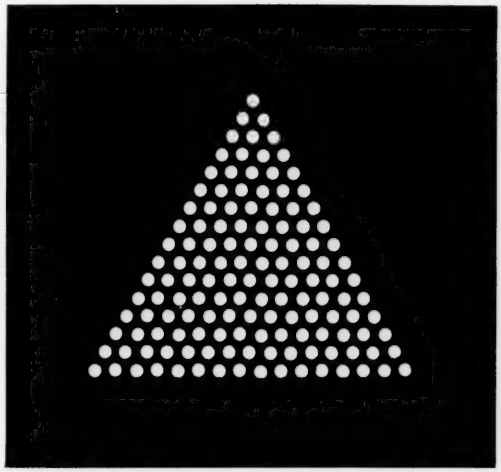


FIG. 2.

The diagram is in accordance with Dr. Hughlings Jackson's teaching, for it represents the four characteristics of the more highly and more recently evolved layers as laid down by him, namely, (1) "Increasing differentiation (greater complexity)"; (2) "Increasing specialisation (greater definiteness);" (3) "Increasing integration (greater width of representation);" (4) "Increasing co-operation (greater association)".[1]

The diagram may now be applied to the description of the neural events in the following comparatively simple case of sensory stimulation. Suppose figure 2 to be cut out and laid

[1] *British Medical Journal*, January, 1898.

upon a dark ground in a good light.[1] Then, when the optical image of it falls on my retina, it excites by a purely reflex action some degree of contraction of my pupil. This effect is produced by the excitation of the path of level i. So long as the figure is at all within my field of vision, it continues to produce this effect however little conscious or unconscious of its presence I may be.

Under ordinary circumstances the image will, if it falls upon a lateral part of the retina, cause (or tend to cause), a reflex turning of the visual axis of the eye towards itself, or, if it falls on the fovea of one eye, will cause a convergence of the two visual axes upon itself, and also a contraction of the muscles concerned in accommodation of the lenses, and it will at the same time produce some obscure affection of consciousness of the nature of a sensation of light localised in that part of the visual field. These effects are due to the excitement of a path (say *c*) of level ii superadded to the excitement of the path of level i.[2] But these effects are not so certain and invariable as the former effect, the contraction of the pupil, for if the light be very strong it may cause the eye to be turned away and the eyelids to close, a different path of level ii. (say *b*) being excited. The paths of level ii. are also liable to cease to be active under certain special conditions. Thus if my eyes continue for some time to be directed quite steadily towards the object; and especially if, at the same time, by instillation of atropine, or by other means, the accommodation mechanism be completely relaxed,[3] the image will disappear suddenly and completely from consciousness, thus exhibiting that curious phenomenon which I have described and called 'the complete fading of visual images';[4] and at the same time the reflex-influence, that guides the direction of the visual axes, ceases, as is shown by the tendency for the fixation to waver, which at once appears. When this happens it

[1] In the case of this and similar figures I have always used pieces of perforated zinc, blackened and laid against a sheet of white paper or glass fitted into an aperture in the window-shutter of a dark room, so that the figure is the only object in the visual field.

[2] In this connexion it is important to note that experiment has shown that direct stimulation of the visual cortex, the seat of the paths of level ii., may cause movements of the eyes independently of any activity of the area for eye-movements in the 'motor' region of the cortex, and the same is true of the superior temporal convolution, the auditory area, in regard to movements of ears, head and neck. (See Foster's *Text-book of Physiology*, pp. 1172, 1188.)

[3] Definition being preserved by the use of convex glasses.

[4] "Some New Observations in Support of Young's Theory of Colour-vision," sect. i., MIND, N. S., vol. x.

is because the excitation-process ceases suddenly to propagate itself through the paths of level ii.; it fails to overcome the resistance of the synapses of the path, that resistance having been increased by the fatigue due to continued activity of the tract,[1] while in all probability (though this is a point that I have not yet examined) the image continues to excite some degree of contraction of the pupil through the continued activity of the path of level i. It is characteristic of the paths of level ii. that the activity of any one path is not, under ordinary circumstances, markedly interfered with by the activity of other paths of the same level, or by the activity of paths of higher levels not directly connected with it. Thus a large number of objects scattered in different parts of the visual field may simultaneously affect consciousness in the obscure manner characteristic of paths of level ii.; and objects may continue to evoke appropriate movements of the eyes and a proper degree of accommodation, while my thoughts are occupied by matters entirely unconnected with the visual field, as when sometimes in reading my eyes follow faithfully all the lines of a page while my thought is occupied with quite other matters than those with which the printed page is concerned, and only on reaching the foot of the page do I become aware that I have taken in nothing of the meaning of either sentences or words.

Unless my attention is firmly held in other directions the visual object (figure 2) will usually give rise to a more definite affection of consciousness than the obscure sensation of light, it will be to some extent noticed or apprehended, if only as one of a number of visual objects, and it may be apprehended in any one of various ways. Thus I may apprehend it merely as a group of white spots on a dark ground, or as a triangular area with white discs scattered over it, or as an opaque perforated framework placed over a white ground. In any such case the excitation continues to excite level i. and path *c* of level ii., and penetrates also to one or other of the paths of level iii. which also leads to a certain motor outflow, complicating the motor effects due to the activity of the two lower paths. Now suppose I apprehend the figure as a triangular area with white discs scattered over it, and continue to gaze directly at it, one of the paths of level iii., say *g*, is then active, as well as paths *a* and *c*; presently, without any sense of activity on my part and without any movement of the eyes having occurred,

[1] For evidence of this increase of resistance of synapses during continued activity, see pp. 592-600 of my article in *Brain*, 1901.

the discs appear arranged in rows all parallel to the base of the triangle. The excitation has penetrated to one of the paths of level iv. (say *h*) and the activity of this path contributes to consciousness the peculiar constituent which, being superadded to the constituents contributed by paths *c* and *g*, consists in the awareness of this definite arrangement of the discs upon the triangle, and also leads to a further complication of the motor outflow, namely a tendency, which, in the absence of previous practice, can hardly be resisted, for the eyes to move along the direction of the parallel rows. I continue to gaze passively at the figure, and presently the discs suddenly rearrange themselves, they no longer appear as forming rows parallel to the base, but form rows parallel to the left side of the triangle. The path *h* has ceased to be excited, but another path, *i*, of level iv., is active and leads to a different motor outflow, namely a tendency to move the eyes in a direction parallel to the left side of the triangle. Presently, again, the discs assume a third arrangement, namely rows parallel to the right side of the triangle,—the excitation has passed to a third path, *l*, of level iv., deserting path *i*. These paths of level iv. constitute very simple yet true mental systems (in their physiological aspect) and the definite groupings of the discs in this and that way is due to successive acts of apperception of the sensory presentation by these mental systems in turn. Other groupings may appear, other mental systems, other paths of level iv. may become active in turn and cause the discs to be apperceived as forming concentric circles, or concentric triangles, or lines radiating out from a central disc. But the three groupings first mentioned, rows parallel to the sides of the triangle, predominate in my case, and they may continue to alternate with one another for a considerable period, no one holding the field for more than about one or two seconds, even if I make an effort to hold it fast. After a time my attention relaxes and spreads out, as it were; I no longer see any definite grouping of the discs, the figure becomes again merely a triangular part of the field with white discs scattered over it, the excitation ceases to penetrate to any of the paths of level iv., but continues to reach level iii. Then perhaps a voice draws my attention to auditory stimuli, and while my eye remains steadily fixed upon the figure (in virtue of a motor disposition formed by previous practice) its image ceases to excite paths of level iii, and, continuing to excite paths *a* and *b* only, it contributes to consciousness only the obscure and undiscriminated sensation.

And if, in virtue of the preformed motor disposition, my eye still continues steadily directed upon the same spot, path *c* may cease to be active, and the whole figure disappears from consciousness; or individual discs may disappear and reappear suddenly and completely, the different parts of the path *c* corresponding to the individual discs ceasing to be active for moments independently of one another.

The apprehension of the discs as parallel rows lying in this or that direction and in other groupings constitutes, I submit, a typical instance of non-voluntary attention, the same sensory presentation being variously apperceived by different mental systems in turn, mental systems that have been built up by previous experiences of horizontal parallel lines, of circles, of triangles, etc., respectively. And when, as it is easy to do, I voluntarily call up this or that grouping, the physiological state set up must be entirely similar. Lest any one should be inclined to deny that we can properly describe as a mental system (in its physiological aspect) a system of paths so relatively simple as those which may be supposed to be concerned in these different modes of apprehension of figure 2, I would point out that the case is exactly parallel with the cases of such ambiguous figures as Necker's cube and the well-known staircase-figure, in which cases the activity of well-defined and relatively complex mental systems will hardly be denied.

I shall have frequent occasion to return to this figure in considering the factors that determine these movements of attention and the direction of these movements, but here I am only concerned to define the state of attention in terms of physiological processes. We will consider, therefore, other ways in which attention may be given to this figure. Attention may be concentrated on one only of the discs, as when I judge whether or no it is exactly circular. All the other discs then fall into the field of inattention, and the excitation-processes initiated by them are confined to levels i. and ii. only, while only those set up by the one disc penetrate to higher levels and excite the paths which constitute the mental system for circles and which lead to a motor outflow that tends to move the eye around the circumference of a circle. Or again, attention may be concentrated on a still smaller part of the figure, as when I minutely examine the texture of the paper at the centre of one of the discs. Note that this concentration does not necessarily mean a narrowing of the paths excited; the width and complexity of the paths excited in the higher levels depends chiefly upon the degree of complex development of the mental

system to which the excitation penetrates. Thus, in the last instance, if I were a paper-maker by trade, the mental systems excited would be far more complex and extensive when attention was concentrated on a minute area of the paper than when the whole figure was attended to as regularly grouped discs; in the former case a small number only of the elements of the paths of level ii. propagate their excitement to higher levels, but in those higher levels the excitation-process spreads through a much wider system of paths.

We may conceive the physiological state underlying the state of attention in a similar manner for all classes of sensory presentations. Thus, at all times, or almost all times, during the day, a continuum of undiscriminated sounds affects my ear, causing through the excitation of various paths of levels i. and ii. an obscure affection of consciousness. Suddenly my attention is drawn to one of these sounds, and—to take a recent case from my own experience, —I apperceive it as the self-congratulatory clucking of a hen; the excitation set up by this particular auditory stimulus has penetrated to the higher levels and excited the mental system built up by previous experiences of such maternal rejoicings. I go on with my work and after a few minutes my attention is drawn to a sound which I take to be the voice of a hawker in the distance crying 'hokey-pokey'. But then by retrospection I discover that the same sound has been repeated at short intervals, while my attention was not given to it, and that what I previously apperceived as the voice of a hen I have apperceived a second time as the voice of a man; and now I hear it alternately as one or the other, the sound seeming to change in quality with each change of the mode of apperception, and I cannot convince myself of the truth of either mode. Here the same auditory presentation repeatedly exciting the same lower-level paths penetrates to two different higher-level paths, two mental systems alternately, just as was the case with the visual presentation of figure 2.

As parallel to the case of concentration of the attention on a small part of the visual field we may take the discrimination of an overtone. In this case a group of lower-level paths is excited by the clang, the complex of auditory stimuli, but the excitation of only one of these paths penetrates to a higher-level path and is therefore attended to and discriminated. Whereas, if the clang be attended to as a whole, be apperceived as a note of this or that instrument, all the lower level processes will combine to excite a single higher-level path, the mental system for this or that instrument.

We may now consider more intimately the characteristics of the higher- and lower-level paths respectively, and we may profitably confine our attention to the differences between paths of the levels ii. and iv. Paths of level ii. are characterised by the relatively great constancy and regularity of their response to sensory stimuli, by the vagueness of the contribution to the total state of consciousness that they effect, and by the fact that their activity is but little or not at all interfered with by that of higher levels and under ordinary conditions only in a slight degree by the activity of other paths of the same level. There is, however, some such reciprocal interference between different paths of level ii., for when, under the special conditions that I have described,[1] one visual sensation causes the total disappearance from consciousness of another visual sensation due to the excitation of another part of the same, or of a non-corresponding part of the other, retina, this must mean that the second image ceases to excite paths of level ii., and this would seem to be due to an inhibitory effect exerted by the other paths of level ii. excited by the first image; for attention to the first image does not seem necessary to the production of this effect. That the activity of paths of level ii. is in a high degree independent of activities of paths of higher levels may be realised by fixating figure 2 (preferably on a larger scale) and allowing the eyes to remain quite unmoved; one's thought may then range over any remote subject while nevertheless the white discs continue to affect consciousness in the obscure manner characteristic of level ii., and if, as may frequently happen when one's eyes have acquired the habit of stillness, one or more of the discs ceases to produce this obscure affection of consciousness, if, that is, it undergoes complete fading, one usually becomes at once distinctly aware of the change.

The paths of level iv., or higher-level paths in general, are characterised (1) by extreme inconstancy and irregularity of action, *i.e.*, even under the same constellation of sensory impressions different paths continually become active for brief periods of time and in turn quiescent, the degrees of resistance of these paths undergoing rapid changes through the influence of certain factors that we have to study; (2) by the clearness and definiteness that is given through their activity to the vague state of consciousness due to the activity of lower levels; (3) by the impossibility of simultaneous

[1] See 'Observations in Support of Young's Theory of Vision,' section ii., MIND, vol. x.

activity of different paths of level iv. shown by the fact that only one system of such paths can be active at any moment, *e.g.*, in the case of figure 2 it is impossible to see more than one kind of grouping of the discs in the same area at the same time, and it is impossible to see any one of the groupings if attention be otherwise occupied either with auditory or other sensory impressions or with any train of ideas not immediately related to the figure; (4) it is further characteristic of these higher-level paths or systems of paths that the form of the path is not intimately determined by the character of the sensory stimulus as is the rule with the paths of level ii.; thus when figure 2 is viewed from different distances or in different colours, the paths of level ii. must be different in every case, while, in all probability, the path of level iv. that is concerned in the apperception of the discs in any particular grouping is identical in such cases; the activity of this one path may be superadded to that of different lower-level paths.

The paths of level ii. are, then, in my view, the physiological bases of the undiscriminated sensation continuum; through them are effected those reactions which Dr. Stout has called sensation-reflexes.[1] Or they may be called the physiological bases of pure sensation; images that fall upon the peripheral retina and fail to draw attention to themselves, or upon the central retina while attention is otherwise occupied, or while I am only half awake and attention is at a minimum, such visual images give rise to an affection of consciousness that is as nearly a pure sensation as we, with our complex mental life, are capable of experiencing. And when some combination of factors brings it about that the excitation-process in any one set of these lower paths penetrates to paths of a higher level, the lower paths still contribute to the state of consciousness the same elements and determine the quality and the intensity of the sensation while the upper paths contribute those peculiar features which, being added to the sensation, convert it into a perception.

The power of thus penetrating to the paths of higher levels, determined by some or all of those factors which we have to study, constitutes the '*Eindringlichkeit*' of the presentation attended to; and the complexity of these upper paths, their numerous interconnexions, the extreme variability of the resistances presented by them, and the number of alternative paths that may be opened in turn to the

[1] *Manual of Psychology*, bk. ii., chap. ii.

excitation-process, are the physiological basis of the '*Lebhaftigkeit*' of the presentation and render "the sensation attended to more active, evoking such fusion and association as renders further understanding of the object possible".

I believe that we may introspectively distinguish the effects of the activities of the paths of different levels in the case of representation of a sensation just as in the case of its actual presentation through the sense organ. In the paper in *Brain* referred to above,[1] I have suggested that the essential physiological difference between a sensory presentation and its representation or reproduction in memory is that, whereas the former involves the passage of the excitation-process through the whole length of the conduction-paths concerned, from the sense-organ to the muscle, and therefore the discharge of neurin across all the synapses in the course of such a path, the latter, the representation, means that the excitement of the same paths is initiated in their central parts, so that only the synapses efferent or distal to the central neurones are the seats of the psycho-physical processes; that is to say, I regard the peculiar quality of reality as contributed by the psycho-physical processes of the synapses afferent to those central neurones, and its absence from the representation is thus accounted for. I take this to be true of the paths of level ii., but whether it holds for paths of other levels is less clear. It is, I think, doubtful whether the representation involves any re-excitement of level i.; I do not know that there is any evidence that, for example, the pupil contracts when we call up the idea of a bright light. And in the case of the paths of levels higher than level ii. it is possible that the psycho-physical processes underlying the representation are entirely similar to those excited by the presentation.

When I voluntarily call up the memory-image of figure 2, I may intend to see the discs arranged in parallel rows lying in this or that direction, and this intention involves a tendency for the eyes to be moved to and fro along this line of direction, this or that path of level iv. is re-excited and leads to its appropriate motor outflow. In the case of persons who do not visualise at all, this intention together with verbal imagery constitutes probably the whole of the representation. But, like all probably who visualise well, I can then by a further distinct voluntary effort call up the images of the white discs on the dark ground arranged in this or that fashion, *i.e.* the re-excitement spreads to the central neurones of the paths of

[1] *Brain*, 1901.

level ii. I can then at will throw the discs so visualised into any one of the various possible groupings, just as in the case of the actual image or after-image.

In a paper in this journal[1] I somewhat rashly suggested that all the undiscriminated elements or factors of our mental life should be regarded as purely physiological processes. This view has been criticised by Mr. Shand[2] and I accept in the main those criticisms so far as sensory presentation is concerned. In making that suggestion I was attempting to bring under one point of view things that do not really belong together. But I think that we must recognise a well-marked distinction in this respect between presentation and representation. Thus, just as I can take in at a glance a moderately complex visual object, so I can reproduce such a moderately complex object in memory, but if then I concentrate attention upon a small part of this representation there remains only the part attended to, this part is not surrounded by a field of undiscriminated parts, obscure sensation-elements, such as certainly remain when I concentrate attention on a part of the actual visual presentation. In the latter case, a certain constellation of conditions enables the excitation of one group of paths of level ii., out of many groups excited, to penetrate to higher levels; in the former case this one group alone is re-excited from above.

I have now defined the physiological state that underlies the state of attention, but to complete the physiological definition it is necessary to describe the changes involved in a movement of attention.

The forward passage of the excitation-process through some system of paths leading from sensory to motor neurones is the basis of what Prof. James has called the 'substantive parts' of the stream of thought. Our scheme enables us to assign in a rude way a physiological basis for the 'transitive parts' also, for those obscure 'feelings of relation,' of which the importance has been insisted upon by Herbert Spencer and James. Let us take again the very simple case of figure 2. The apperception of the figure as a triangle covered with rows of white discs lying parallel to its base means the flow of neurin through paths *a*, *c*, *g* and *h* of figure 1. This state of things, giving rise to a substantive part of the stream of consciousness, may persist for a small fraction of a second only or for more than one second, and then occurs a movement of attention which results in my seeing the discs as rows parallel to one side of the triangle. This

[1] MIND, N. S., vol. vii. [2] MIND, N. S., No. 28.

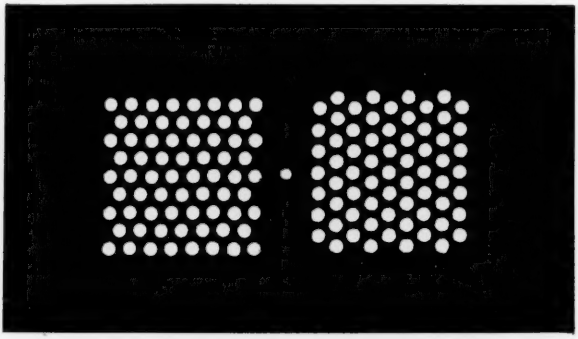
means that while neurin continues to flow through the paths *a*, *c* and *g* it no longer flows through path *h*, but by another path, *i*, of level iv. One or more neurones of path *h* instead of discharging in the forward direction has discharged in a lateral direction across a synapsis by which it is connected with a neurone of the same level, path *i*, this path having become the path of lowest resistance in level iv. and therefore the path of forward conduction. This lateral discharge is the psycho-physical process of which the psychical effect is a 'transitive part' of the stream of consciousness, which in this case can only be described as an obscure and somewhat confused feeling of change.

We must assume the existence of such lateral connexions between all neurones of any one level. It is the improvement or organisation of such lateral connexions that constitutes the physical basis of an association between two ideas, and such an association is set up by the movement of attention from one idea to the other, *i.e.*, by the discharge of neurin from the path subserving the one idea through such lateral connexions or synapses into the path subserving the other. In the case of the movements of attention that occur during fixation of figure 2 the resulting association manifests itself in the ease with which a similar movement of attention subsequently recurs on repeating the fixation.

When the movement of attention involves, not merely a change of the mode of apprehension of one object that continues to affect the sense-organ in the same way, but a change of the object also, the 'transitive part' of the stream of consciousness becomes much more prominent. Under ordinary circumstances such a movement of attention involves a readjustment of the sense-organ, and the feeling of this readjustment forms a prominent element of the 'transitive part'. But it is not an essential part, and it is instructive to study the change when this element is excluded as far as possible. This we may do with the help of figure 3.

I fixate the white spot in the centre of the figure and keep my atttention fixed on *b*, which I can achieve by voluntarily throwing the discs into vertical rows and into rows sloping to the right and to the left successively. While my attention is thus given to *b*, the impression made by the square *a* is in the field of inattention. While continuing steadily to fixate the white spot in the centre (and this I think can only be done as the result of an artificially acquired habit or motor disposition) I can then voluntarily turn my attention to *a* and apperceive it as rows of discs alternately horizontal,

sloping to the left and sloping to the right, while *b* ceases to be discriminated. This movement of attention involves not only a change in the distribution of neurin in the paths of level iv., as in the case of the simple movements that take place while the one square only is attended to, but also a redistribution in the paths of level iii.; the 'transitive part' of the stream of consciousness is therefore more prominent, and, the movement being a relatively difficult one, it may be of considerable duration, and for a short time I do not attend to or apperceive any part of the visual field, the clear awareness being replaced by a somewhat confused sense of strain and change that may seem to fluctuate uncertainly. In this case the organisation of lateral connexions by the movement of attention is shown by the greater ease with which



a FIG. 3. *b*

the movement can be effected after several repetitions; the movement of attention has established an association between its terms.

If now we assume that the neurones of any upper-level path, of any mental system, after forming the main path of forward conduction and after, in virtue of a movement of attention, discharging laterally into another path of the same level, continue to discharge neurin across these lateral synapses, returning only gradually to the resting condition, then we may see in this persistent but diminishing lateral discharge the physical basis of that which James calls the "felt fringe of relations" and which Stout calls the 'primary meaning,'[1] of that group of after-effects which renders the word at the end of a sentence so different to the same word standing alone.

[1] *Manual of Psych.*, p. 81 *et seq.*

We must distinguish, then, connexions between neurones, *i.e.*, synapses, of two orders; on the one hand, those which connect neurones forming a path of forward-conduction, —through these the discharge of neurin normally occurs in the forward direction only; on the other hand, those which form lateral connexions between neurones that are members of different forward conduction-paths,—through these the discharge may take place in either direction. Whether these two classes of synapses are sharply marked off from one another is not clear, but the well-established fact of exclusively forward-conduction in those which form parts of paths in the spinal cord, and the fact of the frequent cases of establishment between ideas of associations that work equally well in both time-orders, compel us to recognise such a difference in kind among synapses; for, however in detail we may picture the physiological basis of such associations, we must assume that it consists in paths through which excitement may spread equally well in both directions.

It seems probable that the differences of behaviour of synapses in respect to conduction in one or both directions are the effects of differences of use. If we make this assumption we can explain at once, (1) the valve-like action of the synapses of the paths of forward-conduction, for in these the discharge of neurin is normally from afferent to efferent side only; (2) the fact that if a series of presentations be frequently repeated in the same order the individuals become firmly associated in that order and only slightly in the reverse order, as with the letters of the alphabet or a series of nonsense syllables; (3) the fact that any two or more presentations that are repeated in contiguity in time, but in varied time-order, become associated in both orders equally firmly; (4) the fact that some individuals are able, after much practice, to reproduce so vivid an idea of an object that it becomes of the nature of an hallucination and hardly distinguishable from an actual sensory presentation of the object,[1] for in such cases the central excitation would seem to spread backwards to or towards the sense-organ, and so reaching the sensory neurones re-excite the whole chain of neurones constituting a path between sense-organ and muscle.

It will have been noticed that the view here adopted as to the nature of neural processes underlying our states of

[1] See especially the case of G. H. Meyer, quoted by G. E. Müller, *Zur Theorie d. Sinnlichen Aufmerksamkeit.*

consciousness has little in common with that widely accepted view which receives its most complete expression in Prof. Ziehen's *Leitfaden der physiologischen Psychologie*. That view, by assuming that memory-images, or rather the physical traces that condition them, are somehow deposited in the cell-bodies of neurones which are set aside as memory-cells, avoids, or rather refuses to face, the problem of the physical basis of memory which, it must be frankly admitted, is a serious difficulty for the conduction-hypothesis which I have adopted as the basis of my exposition. According to this hypothesis the physiological basis of a sensation, say the sensation aroused by the image of figure 2, is the onward flow of neurin through a complex system of paths from sensory to motor neurones, and the revival in memory of the image means the repetition of this flow from the central parts of the paths onwards to the motor neurones, the essence of the reproduction, so far as it is faithful, being that the same group of paths as was simultaneously excited by the sensation shall tend to be simultaneously re-excited. I have pointed out in a previous paper[1] that this tendency manifests itself in its simplest form in the case of complicated after-images, of which the contiguous parts of homogeneous areas are so associated together that they tend to affect consciousness simultaneously and more or less independently of other parts.

The problem of the physical basis of memory is, then, to discover wherein consists the physical disposition in virtue of which simultaneously excited paths tend to function again simultaneously. We must, I think, assume that simultaneous activity of paths of level ii. effects an improvement of conductivity of the lateral connexions between the neighbouring longitudinal elements of the conduction-paths excited by the sensory stimulus, that is to say, the simultaneous presence of charges of neurin in either of two neurones of level ii., which are laterally connected by a synapsis, must be assumed to increase in some degree the intimacy of their union at that synapsis, and it may be that there is always in such a case some lateral flow of neurin through such a synapsis. The physical basis of memory and that of association would then be regarded as fundamentally similar in nature, both consisting in diminished resistance or organisation of synapses.

This view of the physical basis of memory will appear less inadequate to the explanation of the facts if we bear in mind

[1] MIND, N. S., No. 39, p. 377.

the imperfect character of any memory-image resulting from a single glance at an object. The only tolerably accurate reproduction of a visual image so seen, seems to be the short-lived memory-after-image, and the accuracy of this must be attributed to a persistent activity of, or residual charge of neurin in, the nervous elements excited by the sensory stimulus. If however, we allow our eyes to wander over the visual object and attend first to one part then to another, the different parts become associated together in memory through these successive movements of attention in the way suggested above, and the memory-image becomes much clearer and its parts more definitely related. Our clearest memory-images, as those of the faces of our friends, are always the result of many such movements of attention, very varied in direction and extent and frequently repeated.

I have now completed in rough outline the scheme which represents in crude and diagrammatic fashion what I take to be the physiological states that underlie the state of attention, the substantive part of the stream of consciousness, and the movements of attention, the transitive parts of the stream. I have translated the psychological definition into physiological terms to the best of my ability. The scheme is founded in large part on the physiological evidence detailed in the article in *Brain*[1] and I hope further to justify it, in the course of this paper, by showing that it may be successfully applied to the description of the mode of action of the physiological factors.

If this scheme be approximately correct, the problem before us is to elucidate the working of those factors which bring it about that one organically connected system of paths in the higher levels of the brain shall at any given moment be the one, and only one, path of forward-conduction through those higher levels; or, to expand this statement of the problem, we have to seek answers to the following questions: (1) Why is it that at any moment the excitation set up in the lower levels by some one of numerous simultaneous sensory impressions penetrates to and excites an organised system of paths in the higher levels of the brain? Why does it not confine itself to lower-level paths of which the normal or resting resistance is lowest? (2) What determines this excitation-process to take this or that one of various alternative higher-level paths possible to it? (3) Why is it that, no matter how favourable the conditions and no matter how great a voluntary effort we may make, such a higher-level path does not con-

[1] *Brain*, Winter 1901.

tinue in activity for more than a very brief period? (4) Why is the activity of one such system of higher-level paths incompatible with that of others? that is to say, why can we attend to one object only at one time and to that object only in one way at one time? Can we in fact find a physiological basis for the narrowness and unity of consciousness?

I propose to take up in turn each of the factors enumerated on pages 317-318, and to endeavour to show how they may be conceived to play their part in determining the four effects mentioned above, dwelling more particularly on those factors in regard to which I believe myself able to contribute experimental evidence, drawn chiefly from the field of visual perception. In doing so I shall have occasion to describe certain observations which, it may be hoped, will not be devoid of all interest even to those whom I am unable to carry with me in my view of the physiology of the attention-process.

Note on 'Neurin'.

Since the appearance of my paper 'On the Seat of the Psycho-physical Processes' I have received a number of communications from correspondents to whom I wish to convey my hearty thanks for kindly criticisms. Several, in fact most, of them have protested against 'neurin' being described as a fluid; they tell me that I ought not to be content to regard it as a fluid. I am anxious to defend my way of representing 'neurin' because I believe that an important point of method is in question. In the first place I hasten to point out that, as I ought to have made clear in my former essay, I hope to justify this conception of a fluid 'neurin' by showing in the present series of papers that it is a good working hypothesis, *i.e.*, that it is a useful instrument of description. And I would point out that this objection seems to arise from a too confident belief in the objective reality of the distinction that we are accustomed to draw between matter and energy. It seems to be a deeply rooted infirmity of the human mind, or at least of the modern mind, that it can hardly conceive activities of any sort apart from material bases, so that in the case of those classes of phenomena in which no material carrier of energies can be discovered it has been found necessary to invent an ethereal or immaterial matter for the mind to work upon. Through habitually seeking to represent all phenomena in mechanical terms, in terms of the motion of little bits of matter, many of us have come to believe that in so doing we describe the actual events underlying phenomena. A remedy for this disorder of the intellect is now fortunately at hand and may be prescribed with good hopes of cure, namely, the perusal of Prof. Ostwald's *Vorlesungen über Naturphilosophie* (Leipzig, 1902). In this work the old problems of physics and metaphysics are treated with a surprising freshness and originality, and the superfluous and gratuitous character of the material bases is convincingly displayed. But in the course of his exposition Prof. Ostwald roundly condemns the use of working hypotheses and in reference to fruitful hypotheses of the past he asserts 'that without these hypotheses the discoverers would probably have accomplished more. The discoveries have been made not by means of, but in spite of, the hypotheses' (p. 215).

I venture to think that the form of the argument is unworthy of the author and that he errs in assuming that we are all demi-gods. It is true that when a great physicist declares an atom, or an ether, or an ethereal vortex-ring to be the most real thing known to him we must admit that hypothesis may become 'noxious nonsense'. But when Prof. Ostwald strips modern physics of its hypotheses and then declares that these hypotheses have been worse than useless, he seems to me like one who, having thrown down from a building already many storeys high the scaffolding that obscured its fair and reasonable proportions, proceeds to assert that because it stands firmly and looks so much handsomer without the scaffolding therefore it might *probably* have been built more rapidly without its aid. Neurology, I take it, is still in that early stage in which some concessions to the infirmity of our minds must be made, in which, in fact, working hypotheses may be of the greatest advantage, if not absolutely necessary aids to progress. And it seems to me that by regarding 'neurin' provisionally as a fluid we may reap the advantages without incurring the dangers of hypothesis. To those who may detect in 'neurin' a disagreeable flavour of vitalism I would repeat a remark recently made by Prof. Hering—'To-day the danger of premature and therefore inadequate physico-chemical explanations of the phenomena of life is greater than the danger that the conception of a vital force may be used as a comfortable halting place where the reason may be laid to rest on a pillow of obscure ideas' (*Zur Theorie der Nerventhätigkeit*, Leipzig, 1899).

III.—SYMBOLIC REASONING (IV.).[1]

By Hugh MacColl.

Pure, Abstract, or General Logic.

1. The simplest, the most general, and the most easily applicable kind of logic is the logic of *statements* or *propositions*. To this, and to this alone, can we correctly give the name of *pure logic*. Unlike all other kinds, it has the immense advantage of being independent of the accidental conventions of language. How dependent other systems are on linguistic conventions is shown by the importance they attach to the grammatical distinction between subject and predicate (see §§ 3, 4, 11). In pure logic (as I understand it) "A struck B" and "B was struck by A" are exact equivalents, and any symbol we choose to represent the one may also be employed to represent the other. So in mathematics. The statements "A is greater than B," "B is less than A," "A − B is positive," "B − A is negative," are all four equivalent; and any symbol, $A > B$, or $B < A$, or $(A - B)^P$, or $(B - A)^N$, used to express one of them, will also express any of the others.

2. Statements or propositions are the *indispensable units* of every argument. If one of these units be ambiguous or wanting in clearness, the validity of the argument becomes doubtful. We then discuss the meaning of this faulty unit, taking for our data the grammatical and other linguistic conventions of the tongue employed; and this discussion again must be carried on *by means of propositions*.

3. It is generally assumed that a proposition must consist of a subject and a predicate. That, however, is a matter of convention or definition. If I accept it, I must in my system make a distinction between the two words *statement* and *proposition*. Let me therefore define a *statement* as *any sound or symbol* (or collection of sounds or symbols) *employed to give information*. In this sense the warning "Caw" of a

[1] For III. see Mind, January, 1900.

sentinel rook, and the Union Jack floating from the mast of a passing ship, are statements. The former is equivalent to "Beware; I see a man coming with a gun"; the latter is equivalent to "This is a British ship". These are *elementary* statements—statements that cannot be separated into subject and predicate. In the evolution of human language, that division came later (see § 30).

4. A *proposition* I define as a statement of the form A^B, in which A is the subject, and B the predicate. Thus, every proposition is a statement; but every statement is not a proposition. Let A = Alexander, and B = baker. The proposition A^B asserts that *Alexander is a baker*. If we represent a proposition A^B by a single letter $\boldsymbol{a}$, we may then (considering the *form* alone) say that $\boldsymbol{a}$ is a statement but not a proposition; whereas A^B, by our definition, is both (see §§ 3, 25). Let B_1, B_2, B_3, etc., be the separate individuals that constitute the class B. Then

$$A^B = A^{B_1} + A^{B_2} + A^{B_3} + \text{etc.}$$

That is to say (giving the same meanings to A and B as before), the statement that *Alexander is a baker* is equivalent to the statement that *Alexander is either Baker No.* 1, *or Baker No.* 2, *or Baker No.* 3, etc.

5. Let A = animal, and let B = brown; also let n be the total number of animals under consideration. Then the symbol $A_1^B A_2^B A_3^B \ldots A_n^B$ asserts that A_1 is brown, that A_2 is brown, etc.; that is to say, it asserts that *All the animals of our limited universe are brown*. The symbol $A_1^B + A_2^B + A_3^B + \ldots + A_n^B$, on the other hand, asserts that *one at least* of the animals (either A_1 or A_2 or A_3, etc.) is brown.

6. Let A_1, A_2, A_3, etc., be the individuals forming a class A; and let B_1, B_2, B_3, etc., be the individuals forming a class B. Out of the series A_1, A_2, etc., let an individual A be taken at random. The symbol A^B, on this hypothesis, asserts that A is also one of the individuals in the series B_1, B_2, etc. Hence, $A^{B\epsilon}$, which is an abbreviation for $(A^B)^\epsilon$, asserts that the statement A^B is a *certainty* (ϵ). Thus $A^{B\epsilon}$ may be considered as synonymous with the traditional "All A is B," or "Every A is a B". Similarly, $A^{B\eta}$, which asserts that A^B is impossible (η), is equivalent to the "No A is B" of the traditional logic; while $A^{B\eta\iota}$ denies this, and asserts that "*Some* A is B". In like manner, $A^{B\epsilon\iota}$ denies $A^{B\epsilon}$ (that every A is B), and asserts that "Some A is not B". The symbol $A^{B\theta}$ is equivalent to the combination $A^{B\eta\iota}\ A^{B\epsilon\iota}$, and asserts that A^B is possible but uncertain; that is, it asserts that

one A at least is B, but that every A is not B. Thus $A^{B\epsilon} = A_1{}^B A_2{}^B A_3{}^B \ldots A_n{}^B$, the number n being the number of individuals in the universe A_1, A_2, A_3, etc. Similarly we get $A^{B\eta} = A_1{}^{B\iota} A_2{}^{B\iota} A_3{}^{B\iota} \ldots A_n{}^{B\iota}$; that is, $A^{B\eta}$ asserts that A_1 is not B, that A_2 is not B, and so on till the last A_n. Hence

$$A^{B\theta} = A^{B\eta\iota} A^{B\epsilon\iota} = (A_1{}^{B\iota} A_2{}^{B\iota} A_3{}^{B\iota} \ldots A_n{}^{B\iota})^\iota \, (A_1{}^B A_2{}^B A_3{}^B \ldots A_n{}^B)^\iota$$
$$= (A_1{}^B + A_2{}^B + A_3{}^B + \ldots + A_n{}^B)\,(A_1{}^{B\iota} + A_2{}^{B\iota} + A_3{}^{B\iota} + \ldots + A_n{}^{B\iota}).$$

That is to say, $A^{B\theta}$ asserts, firstly, that one at least of the series A_1, A_2, A_3, etc., is B, and, secondly, that one at least is not B. Out of the n^2 terms in the product of the last two bracket-statements, n terms, namely, $A_1{}^B A_1{}^{B\iota}$, $A_2{}^B A_2{}^{B\iota}$, etc., may be omitted as self-contradictory; for $A_x{}^B$ (which is an abbreviation for $A_x{}^{B\tau}$) asserts that $A_x{}^B$ is *true*, and $A_x{}^{B\iota}$ asserts that $A_x{}^B$ is *false*. Thus the syllogisms *Barbara* and *Frissison* may be expressed respectively by

$$A^{B\epsilon}\, B^{C\epsilon} : A^{C\epsilon} \text{ and } C^{B\eta}\, B^{A\eta\iota} : A^{C\epsilon\iota}.$$

7. But a far simpler, more symmetrical, and more general way of treating the syllogism is to regard it from the point of view of pure or abstract logic. From this point of view all valid syllogisms are but particular cases of the general formula, or formal certainty (see §§ 31, 32)

$$(x : y)\,(y : z) : (x : z),$$

which I will represent by $\phi\,(x, y, z)$, or briefly ϕ, and which may be read "If whenever the statement x is true, y is true, and whenever y is true, z is true; then whenever x is true, z is true". It may also be read as "If x implies y, and y implies z, it follows that x implies z". The symbol ϕ (A, B, C) will then denote what ϕ becomes when any statement A is put for x, B for y and C for z (see § 12). Out of our universe of discourse, consisting say of the individuals P_1, P_2, P_3, etc., let an individual P be taken at random; and let the symbols A, B, C, as *statements*, assert respectively that P will belong to the class A, that P will belong to the class B, that P will belong to the class C; while A′, B′, C′ will be the respective *denials* of these statements. It is evident that, assuming[1] the existence of the classes A, B, C in our universe P_1, P_2, P_3, etc., and considering those syllogisms equivalent which have equivalent premisses and the same or equivalent conclusions, we shall have

[1] This assumption of existence is not necessary except in the case of Darapti, Felapton, Fesapo and Bramantip.

Barbara = ϕ (A, B, C)
Celarent = Cesare = ϕ (A, B, C′)
Darii = Datisi = ϕ (B, C, A′)
Ferio = Festino = Ferison = Fresison = ϕ (A, C, B′)
Camestres = Camenes = ϕ (A, B′, C′)
Disamis = Dismaris = ϕ (B, A, C′)
Baroko = ϕ (A, C, B)
Bokardo = ϕ (B, A, C)
Darapti = ϕ (B, AC, η)
Felapton = Fesapo = ϕ (B, AC′, η)
Bramantip = ϕ (C, BA′, η).

8. All these can be easily proved; but to show the method of bringing all within the sweep of the general formula $\phi(x, y, z)$, it will be enough to prove three, namely, *Fresison*, *Darapti* and *Bramantip*.

$$\begin{aligned}
\text{Fresison} &= (C : B')\,(B : A')'\,:\,(A : C)' \\
&= (C : B')\,(B : A')'\,(A : C) : \eta \\
&= (A : C)\,(C : B') : (B : A') \\
&= (A : C)\,(C : B') : (A : B') = \phi\,(A, C, B') \\
\text{Darapti} &= (B : C)\,(B : A) : (A : C')'.
\end{aligned}$$

But, since the classes A, B, C are understood throughout to exist in our universe P_1, P_2, P_3, etc., we have $\epsilon = A^{\eta_1} = B^{\eta_1} = C^{\eta_1}$. Hence

$$\begin{aligned}
\text{Darapti} &= B^{\eta_1}(B : C)\,(B : A) : (A : C')' \\
&= B^{\eta_1}(B : CA) : (A : C')' \\
&= B^{\eta_1}(B : CA)\,(A : C') : \eta \\
&= B^{\eta_1}(B : CA)\,(AC : \eta) : \eta \\
&= (B : AC)\,(AC : \eta) : B^{\eta} \\
&= (B : AC)\,(AC : \eta) : (B : \eta) = \phi\,(B, AC, \eta) \\
\text{Bramantip} &= (C : B)\,(B : A) : (A : C')' \\
&= C^{\eta_1}(C : B)\,(B : A) : (A : C')', \text{ since } C^{\eta_1} = \epsilon \\
&= C^{\eta_1}(C : B)\,(B : A) : (C : A')' \\
&= C^{\eta_1}(C : B)\,(C : A')\,(B : A) : \eta \\
&= C^{\eta_1}(C : BA')\,(BA' : \eta) : \eta \\
&= (C : BA')\,(BA' : \eta) : (C : \eta) = \phi\,(C, BA', \eta).
\end{aligned}$$

9. It is evident, since $x : y = y' : x'$, that $\phi(x, y, z) = \phi(z', y', x')$; so that all the syllogisms remain valid if we reverse the order of their constituents, provided we at the same time change their signs. For example, Camestres and Camenes may each be expressed, not only in the form ϕ (A, B′, C′), but also in the form ϕ (C, B, A′).

10. In the syllogisms, the statements A, A′, B, B′, etc., are understood to be abbreviations for the propositions P^{A}, P^{A_1}, P^{B}, P^{B_1}, etc., all of which have the same subject P, an

individual taken at random out of the universe of discourse P_1, P_2, P_3, etc. But in the general formula $\phi(x, y, z)$, of which all valid syllogisms are but particular cases, the statements x, y, z need not be understood to refer to the same subject. The formula $\phi(x, y, z)$ holds good whatever be its constituent statements x, y, z, which may, one and all, be *certainties*, *impossibilities* or *variables*. For example, take the case $x^\eta y^\eta z^\eta$, and suppose $x = \eta_1$, $y = \eta_2$, $z = \eta_3$, we get

$$\phi(\eta_1, \eta_2, \eta_3) = (\eta_1 : \eta_2)(\eta_2 : \eta_3) : (\eta_1 : \eta_3) = \epsilon_1\epsilon_2 : \epsilon_3 = \epsilon_4 ;$$

for $\eta : a = (\eta a')^\eta = \eta^\eta = \epsilon$, whatever be the particular impossibility represented by the symbol η out of the series η_1, η_2, η_3, etc., and whatever be the statement a. Next, take the case $x^\epsilon y^\epsilon z^\eta$. Assuming x, y, z to be respectively ϵ_1, ϵ_2, η_1, we get

$$\phi(\epsilon_1, \epsilon_2, \eta_1) = (\epsilon_1 : \epsilon_2)(\epsilon_2 : \eta_1) : (\epsilon_1 : \eta_1) = \epsilon_3\eta_2 : \eta_3 = \eta_4 : \eta_3 = \epsilon_4 ;$$

for, as before, $\eta : a = \epsilon$, whatever impossibility η may be out of the series η_1, η_2, η_3, etc., and whatever the statement a (see § 32).

11. There has been much discussion among logicians as to the "existential import of propositions," especially as to whether the proposition "All A is B" implies the existence of the subject A. The question does not appear to me to belong to the province of *pure logic*, which should treat of the relations connecting different classes of propositions, and not of the relations connecting the words of which a proposition is built up. The latter question is one properly of grammar and philology, and not of general or abstract logic. The answer depends upon the meaning we agree to give to the word *exist*. Take, for example, the proposition "*Non-existences* are *non-existent*". This is a self-evident truism; can we affirm that it implies the *existence* of its subject *non-existences?* In pure logic we have $\eta^\eta = \epsilon$, or more briefly $\eta^{\eta\epsilon}$, which asserts that it is certain that an impossibility is an impossibility. In pure logic the subject, being always a *statement*, *must* exist—that is, it must exist as a *statement*. It may be a certainty, an impossibility, or a variable—it may even (in the circumstances) be unmeaning; yet as a statement it always *exists*. But in pure logic we sometimes have to symbolise statements to which (in the circumstances considered) we can attach no meaning. Such statements belong, *not* to the class η, but to the class o. For example, A^η asserts that A is *impossible*—that is it *contradicts some datum or definition;* whereas A^o asserts that A, in the case considered, is a *meaningless* statement that affirms nothing

and contradicts nothing (see my recent memoir on "La Logique Symbolique et ses Applications" in the *Bibliothèque du Congrès International de Philosophie:* Librairie Armand Colin).

The Logic of Functions or Relations.

12. A symbol of the form $\phi(x)$ or $\psi(x)$ or $f(x)$, etc., is called a *function of* x. It denotes[1] any statement, or part of a statement, *containing the symbol* x. Similarly, $\phi(x, y)$ or $\psi(x, y)$, etc., is called a *function of* x *and* y. It denotes any statement, or part of a statement, *containing the symbols* x *and* y. The symbols $\phi(x, y, z)$, $\psi(x, y, z)$, etc., are to be interpreted in the same manner. The symbol ϕ_x or simply ϕ may be used as an abbreviation for $\phi(x)$. Similarly, $\phi_{x,y}$, or simply ϕ, may be used as an abbreviation for $\phi(x, y)$; and so on. The constituents x, y, z, etc., may each denote a word or collection of words or of other symbols; and they may (as generally with me), or may not (as in mathematics), separately represent complete propositions. When we have any function $\phi(x, y)$, then the symbol $\phi(a, \beta)$ denotes what $\phi(x, y)$ becomes when a is substituted for x, and β for y, *the other words or symbols remaining unchanged.* Similarly, $\phi(x)$ and $\phi(a)$, $\phi(x, y, z)$ and $\phi(a, \beta, \gamma)$, etc., are to be interpreted.

13. For example, let w = whale, h = herring, v = virtue; and let $\phi(w, h)$ denote the proposition "A small *whale* can swallow a large *herring*". Then $\phi(h, w)$ will denote "A small *herring* can swallow a large *whale*," the symbols w and h interchanging places, while the rest of the proposition remains unchanged. It is evident that this convention leads to the conclusion $\phi^\varepsilon(w, h)$, $\phi^\eta(h, w)$. That is to say $\phi(w, h)$ is a *certainty* and $\phi(h, w)$ an *impossibility.* We also get $\phi^\circ(w, v)$; that is to say, the statement that "A small *whale* can swallow *virtue*" is *meaningless.*

14. The symbols $\phi(x)$, $\phi(x, y)$, etc., may thus be regarded as *blank forms* to be filled up, the blanks being represented by x, y, etc., and the words or other symbols to be substituted by a, β, etc. A statement of the form $\phi(x, y, z)$ may be represented by $\phi(x)$ or ϕ_x when the substitutions for x only have to be considered; by $\phi(x, y)$ or $\phi_{x,y}$ when we have to

[1] The definition of a *function* given here is more general than that given of a function in mathematics; and it includes the mathematical definition. I employed the functional symbol $f(x, y, z)$ to denote the complex implication $(x : y)(y : z) : (x : z)$ in my second paper on the "Calculus of Equivalent Statements," published in the *Proceedings of the London Mathematical Society* in 1878.

consider the substitutions for x and y; and so on. When we speak of the *form alone*, without referring to any particular substitutions, we may denote the function simply by ϕ.

15. To show how dependent other systems of logic are upon mere linguistic conventions, which differ more or less in different countries, let us take the proposition "If A is the cousin of B, then B is the cousin of A," and denote it by ϕ (A, B). Translating this into French, let ψ (A, B) denote the proposition "Si A est le cousin de B, alors B est le cousin de A"; and suppose A to be a boy, and B to be a girl. We get the paradox ϕ^{ϵ} (A, B), ψ^{η} (A, B), which asserts that the English statement ϕ (A, B) is *certainly true* (ϵ), while its French translation ψ (A, B) is *certainly false* (η). For in French, "B est *le cousin* de A" implies that B is of the male sex, which is contrary to our data; whereas in English, "B is *the cousin* of A" implies nothing as to the sex of B.

16. Let ϕ_x, as an abbreviation for $\phi(x)$, denote the implication "If A is x of B, and B is x of C, then A is x of C"; and let a = an ancestor, s = a son, c = a cousin, h = the hat. We get $\phi_a{}^{\epsilon}\ \phi_s{}^{\eta}\ \phi_c{}^{\theta}\ \phi_h{}^{o}$. That is ϕ_a is certain, ϕ_s impossible, ϕ_c variable (neither certain nor impossible), and ϕ_h meaningless.

17. According to writers on the *Logic of Relations*, a relation is said to be *transitive*, when the combination of the two propositions "A has the relation R to B, and B has the relation R to C," implies the conclusion that "A has the relation R to C". Accepting this definition, and denoting the word *transitive* by T, and the proposition "R is transitive" by R^{T}, while the symbol $\phi_{x,y}$, or its equivalent $\phi(x, y)$, asserts that "x has the relation R to y," we may express the definition symbolically thus

$$\mathrm{R}^{\mathrm{T}} = \phi_{\mathrm{A},\mathrm{B}}\,\phi_{\mathrm{B},\mathrm{C}} : \phi_{\mathrm{A},\mathrm{C}}.$$

But I think it would be simpler, as well as more general, to call, not the *relation* R but the variable *statement* or *function* ϕ, transitive, and to write the definition thus—

$$\phi^{\mathrm{T}} = \phi_{\mathrm{A},\mathrm{B}}\,\phi_{\mathrm{B},\mathrm{C}} : \phi_{\mathrm{A},\mathrm{C}} \text{ (see § 26).}$$

18. Let ϕ_x denote the statement that "a has the ratio x to β," in which a and β (with all substitutes for them) are understood to be real positive magnitudes, neither infinite nor zero; in other words, let ϕ_x denote the equational statement ($a = x\beta$), we get by definition of T (see § 17)

$$\phi_x{}^{\mathrm{T}} : (\phi_{a,\beta}\,\phi_{\beta,\gamma} : \phi_{a,\gamma}) : (x = 1).$$

That is to say, if the statement which asserts that a has a ratio x to β be *transitive*, the ratio x must be *unity* (*i.e.*, a

ratio of *equality*), and α must be equal to β. When α is not equal to β, the statement is not transitive (see § 19).

19. The preceding may be proved as follows—

$$(\alpha = x\beta)\,(\beta = x\gamma) : (\alpha = x^2\gamma).$$

But since $(\alpha = x\beta)$ is, by hypothesis, transitive, we have also

$$(\alpha = x\beta)\,(\beta = x\gamma) : (\alpha = x\gamma).$$

Hence, from the logical formula (A : B) (A : C) = (A : BC) we get

$$(\alpha = x\beta)(\beta = x\gamma) : (\alpha = x^2\gamma)(\alpha = x\gamma) : (x^2\gamma = x\gamma) : (x^2 = x) : (x = 1)$$

for the supposition $(x = o)$ would contradict our hypothesis that neither α nor β nor γ is zero.

20. Considering the various ratios, $\frac{1}{2}$, $\frac{3}{3}$, $\frac{7}{5}$, etc., as forming a special class of *relations*, the implication

$$(\alpha = x\beta)\,(\beta = x\gamma) : (\alpha = x^2\gamma)$$

may be read: "If α has the relation x to β, and β the relation x to γ, then α has the relation x^2 to γ". We have proved that when this relation (or the statement asserting it) is transitive, then $x = x^2$, and $\alpha = \beta = \gamma$, it being understood throughout that α, β, γ are real and positive.

21. *Ratio* is thus seen to be a particular species of *relation*. Before I attempt to give a *general* definition of the somewhat vague concept *relation*, let us examine another special case. Suppose ϕ_x to denote the statement "AxB" in which the variable x is to be replaced by some word or words, such as *strikes*, *was struck by*, *will speak to*, etc. Let s = struck, w = was struck by, α = will strike, β = will be struck by. Also, let ψ_x denote "BxA," what ϕ_x becomes when A and B interchange places. We get

$$(\phi_s = \psi_w)\,(\phi_w = \psi_s)\,(\phi_\alpha = \psi_\beta)\,(\phi_\beta = \psi_\alpha).$$

These four statement-factors are respectively synonyms of of (1) (AsB = BwA); (2) AwB = BsA); (3) (AαB = BβA); (4) (AβB = BαA). In the four statements ϕ_s, ψ_w, ϕ_α, ψ_β, A stands in the active relation of *striker* towards B, and B in the passive relation of *being struck* towards A; whereas in the four others these relations are reversed. The relations s and w are therefore reciprocal, and so are α and β. The four relations s, w, α, β, taken in pairs, have also relations to each other. The relations s and α are active, w and β passive; s and w are past, α and β future; s is the *active* of w, w is *passive* of s; α is *future* in regard to s, s is *past* in regard to α.

22. These, however, are but discussions on *particular* rela-

tions; whereas what we want is a definition of the word *relation* in its widest and most general sense (see § 26). Such a definition is not easy. To meet the requirements of logic, especially of symbolic logic, I propose the following: Let $\phi(x, \alpha, \beta, \pi)$ and $\psi(y, \beta, \alpha, \pi)$, or their abbreviations ϕ and ψ, denote two equivalent [1] statements which nevertheless differ in three things: (1) that (in *position*) x in the former corresponds to y in the latter; (2) that α in the former corresponds to β in the latter; and (3) that β in the former corresponds to α in the latter — the remaining constant portion π occupying the same position in both. These conditions being satisfied, x (or more strictly x, π) is called the *relation of* α *to* β; and y (or more strictly y, π) is called the *relation of* β *to* α. Also the relation x is called the *reciprocal* of the relation y, and the relation y is called the *reciprocal* of the relation x. We may express this reciprocity by $(x = ry)$ $(y = rx)$, or by any other symbol suited to the particular investigation upon which we happen to be engaged. When $x = y$, the relation connecting α and β is said to be *symmetrical*.

23. A few concrete examples will help to explain this definition and afford some test of its accuracy. Let ϕ assert that A *has lent money to* B, *which* B *has not yet paid;* and let ψ assert that B *has borrowed money from* A, *which* B *has not yet paid*. Here the relation of A to B is that of *creditor*, and that of B to A *debtor;* but we must proceed as if these words had not yet been invented. Numberless relations exist for which single words cannot be found in any language, symbolic or natural, and our definition would be very inadequate if it left these, as yet uncondensed relations, out of account. Let, therefore, x = has-lent-money-to; let y = has-borrowed-money-from; and let π = which-B-has-not-yet-paid. Also let α = A, and let β = B. It will be seen at once that the statements ϕ and ψ with their constituents x, α, β, π, satisfy the definition of § 22. The reciprocal relations are x and y,—or rather x, π and y, π; for the fact that A has lent money to B (or that B has borrowed money from A) does not necessarily, and without the accompanying constituent π, imply that A *is now* B's creditor, though it implies that he *has been* so. If the words *creditor* and *debtor* did not exist in our language, we might compound the words of our

[1] "Equivalent" in the sense that each implies the other. The statements are supposed to be expressed in some non-inflectional language, symbolic or other, in which the value, effect, or meaning of a word or symbol generally varies with its position. Algebra and Chinese are good examples.

statements ϕ and ψ, and, putting the compound word *has-lent-money-to* for *creditor*, and *has-borrowed-money-from* for *debtor*, say that the statement ϕ asserts that A is the *has-lent-money-to* of B, and that the statement ψ asserts that B is the *has-borrowed-money-from* of A. In this form of the statements ϕ and ψ, we have x = *creditor* (or its longer equivalent), y = *debtor* (or its longer equivalent), and π = *is*. The following are self-evident cases of the defining formula of § 22 :—

(1) Let $\phi = (A > B)$, $\psi = (\beta < A)$.

Here $\alpha = A$, $\beta = B$, $x = (>) =$ (greater than), $y = (<) =$ (less than), and π is non-existent.

(2) Let $\phi = (A : B) =$ (A implies B), $\psi = (B \,!\, A) =$ (B is implied by A).

Here $\alpha = A$, $\beta = B$, $x = (:) =$ (implies), $y = (!) =$ (is implied by), and π is non-existent.

(3) Let $\phi =$ (A is now the teacher of B), and $\psi =$ (B is now the pupil of A).

Here $\alpha = A$, $\beta = B$, $x =$ teacher, $y =$ pupil, and $\pi =$ (is now the).

(4) Let $\phi =$ (A was formerly the teacher of B), and let $\psi =$ (B was formerly the pupil of A).

Here $\alpha = A$, $\beta = B$, $x =$ teacher, $y =$ pupil, and $\pi =$ (was formerly).

24. The last two examples (3) and (4) will show why I said that the stricter or more accurate relations were not x and y but x, π and y, π. Instead of saying "A *was* formerly the *teacher* of B," we may put the verb in the present tense, and say "A *is* the ex-teacher (or former teacher) of B"; and just as the words, *ex-king*, *queen-dowager*, etc., do not express the same relations as *king*, *queen*, etc., so x and y do not generally express the same relations as x, π and y, π.

25. This possibility of converting relations of the past or future into relations of the present is one of the many advantages of pure logic or the logic of statements. Let the symbol A denote the statement "The event α *did* happen," or let it denote the statement "The event α *will* happen". In either case we write A^τ, A^ι, A^ϵ, etc.; that is, A *is* true, A *is* false, A *is* certain, etc. If A = "The event α *did* happen," then A^τ asserts that "It *is* true that α *did* happen"; and if A = "The event α *will* happen," then A^τ asserts that "It *is* true that α *will* happen." Whether A refers to the past, present, or future, A^τ (which replaces A in symbolic reasoning) always refers to the *present*; and the same may be said of A^ϵ, A^η, A^θ, and of A^x generally, whatever class of statements x may represent. Thus A^τ and A^ι are not exactly synonymous with A and A′.

26. The preceding discussion seems to me to make it clear that the so-called *logic of relations* bears pretty much the same relation to *pure logic* (the logic of statements) as the *theory of functions* bears to *pure mathematics* (see § 12); that is to say, in each case, the former is a special development in a particular direction of the latter. For this reason, in order to mark the analogy, the *logic of relations* should rather be called the *logic of functions*. The questions which it discusses are closely connected with philology and the theory of language is general. In mathematics the words *function* and *relation* are so closely allied that they may almost be considered synonymous. The statement $(A = f_B)$ may be read either as "A is the *function* f of B," or as "A has the *relation* f to B". The mathematical functions (or relations) f and F are *reciprocal* when we have

$$(A = f_B) = (B = F_A).$$

Applying to this case the defining formula of § 22, we find that ϕ here denotes $(A = f_B)$, that ψ denotes $(B = F_A)$, that x denotes f, that y denotes F, and that π denotes the sign $=$, common to the two leading[1] functional statements ϕ and ψ. A mathematical function (or relation) f is *symmetric* when we have

$$(A = f_B) = (B = f_A).$$

A mathematical function (or relation) f is *transitive* when we have

$$(A = f_B)\ (B = f_C) : (A = f_C).$$

27. Perhaps the most important principle underlying my system of notation is the principle that we may vary the meaning of any symbol or arrangement of symbols, provided, firstly, we accompany the change of signification by a new explanatory definition; and provided, secondly, the nature of our argument be such that we run no risk of confounding the old meaning with the new. Of course this variation of sense should not be resorted to wantonly and without cause; but the cases are numerous in which it leads both to clearness of expression and to an enormous economy in symbolic operations. This is especially the case when the nature of our researches requires the frequent repetition of a lengthy symbolic expression. Then, three courses are open to us. Firstly, we we may accept this repetition with all its inconvenience; or,

[1] Here we have *functions of functions*. The *statements* ϕ and ψ are functions of the mathematical functions f and F, *which are not statements*.

secondly, we may invent a wholly new symbol of unwonted form and unsuggestive of any analogy; or, thirdly, we may (as I usually do) borrow some familiar and, if possible, suggestive symbol (or combination of symbols), divest it of its old meaning, and, by the aid of a fresh definition, supply it with a new. This last course unquestionably requires much thought and deliberation in the choice of the symbol (or combination of symbols) thus to be entrusted with new duties. The great danger to be guarded against is, of course, the danger of ambiguity. The symbol (or combination of symbols) chosen should be such that the context and the general nature of the research must render its meaning unmistakable Does not the context usually prevent ambiguity in the ordinary language of daily life? Can we, for instance, ever confound a *verb* with a *noun*, because they now and then happen to be identical in form? What prisoner attempting to escape could misunderstand the stern warning of the sentinel, "If you move another step, I shall fire," and imagine that the latter was speaking of a *fire in a grate?* Suppose, when I enter upon some investigation in probability, I lay it down as a preliminary that capital letters must be understood throughout to denote statements; that small italics denote the numerical values of chances; and that the symbol A^x is an abbreviation for the proposition, "The chance that A is true is x". If at the end of my investigation I arrive at the conclusion $A^{\frac{1}{2}}$, what can this mean but that the chance required as to the truth of A is $\frac{1}{2}$? In ordinary algebra, when A is understood to denote a number or ratio, the symbol $A^{\frac{1}{2}}$ denotes the *square root* of A; but, in the sphere of pure logic, what meaning can we attach to the square root of a *statement?* No other logician or mathematician, so far as I know, has as yet insisted upon, and acted upon, this principle of absolute liberty to vary not only the meanings of our separate symbols, but also of their combinations or collocations, whenever clearness, brevity, or other convenience demands it. Prof. Peano (who may be regarded as the leader of the Italian school in symbolic logic) appears to go on the very opposite principle. He holds (if I rightly understand him) that each separate idea should be represented by its own special symbol, which we should never, if we can by any possibility avoid it, employ in any other sense. Now, I am not prepared to say that this is necessarily a wrong principle as regards *his* scientific explorations—some people make discoveries by travelling eastwards, others (like Columbus) by travelling westwards; but I feel quite sure that the principle would never succeed in *my* researches. For these Prof. Peano's

notation is much too complicated. Should any one doubt this let him try his notation instead of mine in the solution of one of the complicated problems which I worked out in my recently published memoir on "La Logique Symbolique et ses Applications," in the third volume of the *Bibliothèque Internationale du Congrès de Philosophie*. It seems to me that our notation should always be shaped and suited to the nature of the investigation and to the kind of problems we encounter. Symbolic conventions that may be admirably adapted for one class of problems may be altogether unsuited for another. Even in dealing with the same class, synonymous symbols for the same thing, idea, or proposition, and variations of meaning for the same symbol, are often convenient. The symbols A : B and $(AB')^\eta$ are synonyms ; the latter being the definition or explanation of the former, and, therefore, by implication, the clearer of the two. But take the two synonymous complex statements :—

$$(A : B)\,(B : C) : (A : C) \text{ and } {}^{\cdot}_{\cdot}(AB')^\eta\,(BC')^\eta\,(AC')^{\eta}{}^{\cdot}_{\cdot}{}^{\eta},$$

the former of which dispenses entirely with the symbol η, and the latter entirely with the symbol : . The former is transparently evident, which is far from being the case with the latter. Two photographs or drawings of the same landscape may both be accurate from their respective points of view ; yet one may appeal instantaneously to the memory, while the other is with difficulty recognised.

28. As an example of the same symbol used in different senses take the symbol A_B. In certain cases I use this symbol as a convenient representative of the implication A : B ; but I also use it in other senses when convenient (of course after due warning), and entrust the expression of implication to A : B alone (See *Bibliothèque du Congrès Internationale de Philosophie*, vol. iii. p. 166). One of these uses I define as follows : When we have a series of concrete things or abstract statements forming the class A_1, A_2, A_3, etc. ; then A_B denotes the individual (or any one of the individuals) of the series for which A^B is true ; A_C denotes the one (or any one) for which A^C is true ; and so on. Thus in A_B the subscriptum B is *adjectival ;* whereas in A^B the exponent B is *predicative*. For example, let S = *stag*, let B = *brown*, and let K = "*has been killed by me*" or "*I have killed*". Then S^K_B will mean "The *brown stag* (or a brown stag) has been *killed* by me," or "I have *killed* the (or a) *brown stag*" ; whereas S^B_K would mean "The *stag* which I have *killed* (or which has been killed by me) is brown". Or again, supposing our universe of brown things to be restricted to animals,

we may have B_K^S, which would mean "The *brown* animal which I have *killed* is a *stag*. These examples bring us to the border of another class of questions which will be discussed in what follows.

Brute Reasoning and Human Reasoning.

29. It is probable that the primitive language, or primitive languages, of our remote ancestors, like the languages of the animals around them, consisted of mere elementary statements, such as, in our own day, the warning "Caw" of a sentinel rook, or the "Cluck" of a hen when she calls her chickens. These animal statements (like the more or less complex propositions of ordinary human speech) are simply *data*—unconsciously perhaps supplied in the case of some of the lower animals, and without foreknowledge of their effects, but purposely and with foresight in the case of the higher—*data* purposely offered in order that others may therefrom draw correct and useful conclusions. What does the "Caw" of the sentinel rook perched on the branch of a commanding tree say to the others on the ground busily feeding on the farmer's property? To one of these it may say, "A man is coming with a gun"; to another it may say, "A boy is coming with a catapult"; to all it says, "Danger approaches," though their respective ideas as to the precise danger may be vague and varied.

30. Let us now fly far back into the past and try to picture to our minds the origin of human language as we now know it—the language of *propositions*. When was it, and how was it, that primitive man—the desiderated "missing link" of anthropology—escaped from his chrysalis and passed from the brute condition into the human? I do not say *became* human: human he must have been before, or that barrier would have for ever remained impassable. It is the same germ that develops first into a caterpillar and then into a butterfly. To the first question—the question as to *when?*—we can give no answer. Geologists may fix within more or less exact epochs the structural variations that have taken place in animal bodies; they can hardly fix the dates corresponding to the changes in the delicate organ called the brain; still less those corresponding to the changes in that mysterious entity which works through the brain, which no microscope can detect, and which, in animals as in man, we may for the present agree to call the *mind*. To the *How* question we cannot give a precise and definite answer either. In the chain of mental evolution it would be idle to seek

the "missing link"; here the missing links are not one but many. The first of our far-off pre-historic ancestors that barked a tree or raised a heap of stones in order afterwards to remember where he had hidden some object which he prized, performed therein an act which ranks him at once as human. We may even go further and honour that great pre-historic unknown as the *first inventor of symbolic logic.* His arbitrary mark, whatever its nature, represented not one proposition merely but a whole train of reasoning, which we may translate freely as follows: "When I see this mark, it will remind me of the exact position of that spot yonder, where I am now going to hide this provision of nuts". Symbolic concentration of language could hardly be carried further. Yet it does not follow that the language of this 'missing link' and of his tribe had as yet attained the propositional stage. Probably it had not. A higher place must be assigned to that other, and probably later, 'missing link' who first grasped the idea of varying the order or collocation of the elementary sounds or symbols that individually represented *statements* in his (or her) language, so as thereby to form new and more precise statements (or *data*) suggestively allied to the old in their sound or in their form, yet differing from the old and from each other in their signification. Take the examples of § 28, namely, $S_B{}^K$, $S_K{}^B$, $B_K{}^S$. We may suppose that S, B, K were originally separate and complete, but not always clear and definite, statements. In the current language of the tribe the word or symbol S (or its equivalent) might have meant "I see a *stag*," or "I hear a *stag*," or "A *stag* is coming," or "It is a *stag*," etc. Otherwise expressed, the simple sound or symbol S might originally have done duty, sometimes for a proposition $\phi(s)$, sometimes for a proposition $\psi(s)$, and so on (see § 12). The same may be said of its co-symbols B and K. Let us suppose that S, B, K were respectively understood to mean "It is a *stag*," "It is *brown*," "I have *killed* it". Then $S_B{}^K$ (or some other order or collocation SB · K or BS · K or K · BS) would mean "The *brown stag* has been *killed* by me," or "I have *killed* the *brown stag*". Now, let it be observed that in this combination of the elementary statements S, B, K into the complex statement $S_B{}^K$ the statements S and B *are taken for granted as already known*, while the statement K is *asserted as fresh knowledge.* Thus the categorical statement $S_B{}^K$ is analogous but not equivalent to the implication SB : K, which *does not vouch for the truth of either* S *or* B *or* K. The statement $S_B{}^K$ in fact means the same as the simple statement K, "I have

killed it"; the only difference being that the *it* in the latter is replaced by the more definite symbol S_B (the *brown stag*) in the former.

31. This power of inventing and slowly developing a language suited to his needs distinguishes man from the brutes. The languages of the brutes appear to be inherited with their instincts, and to remain always the same; while that of man varies continually. What savage tribe or civilised community at the present time could understand the language spoken by their forefathers 3,000 years ago? Yet to-day the rook caws, and the dog barks, and the horse neighs, just as they did in the days of the ancient Chaldeans or Egyptians. To this difference between man and brute as regards *language* corresponds an analogous difference as regards intelligence. Brute and man alike are capable of *concrete* reasoning; man alone is capable of *abstract* reasoning. To explain my meaning I must have recourse to symbols. The brute as well as man is capable of the concrete inductive reasoning $AB : C$; that is to say, from experience—often painful experience—the brute as well as man can learn that the combination of events A and B is invariably followed by the event C. The higher order of brutes may also be able to communicate to others of their species a knowledge of each event A, B, C separately, or even collectively; but *no brute can communicate to another* a knowledge of the general inductive law $AB : C$, the equivalent of $(ABC')''$, which it has learnt itself by experience. But this is rather a difference between the brute and the human in their respective powers of communicating their knowledge to others of their kind than a difference in their powers of reasoning, and thereby obtaining fresh knowledge for themselves. I will now show (again using symbols) that man possesses a higher reasoning faculty which no brute appears to possess even in the most rudimentary form. We have seen that from two *elementary* premisses A and B, brutes as well as men can, by inductive reasoning, draw a conclusion C. But no brute can, from the two *implicational* premisses $A : B$ and $B : C$ draw the *implicational* conclusion $A : C$. That is to say, the brute is capable of the concrete inductive reasoning

$$AB : C$$

but not of the abstract, deductive and formal reasoning[1]

$$(A : B)\ (B : C) : (A : C).$$

[1] This formula was, I believe, introduced into logic for the first time, about twenty-four years ago, in my second paper on the "Calculus of Equivalent Statements," published in the *Proceedings of the London Mathematical Society.*

It is evident that the latter is not only more difficult, but also that it is on a higher and totally different plane. In the former, the two premisses and the conclusion are all three *elementary statements* (see § 3), while the whole reasoning constitutes a *simple implication*. In the latter, the two premisses and the conclusion are all three *implications*, while the whole reasoning is an *implication of the second order*. The premisses A and B of the former are *percepts* supplied *directly by the senses;* the premisses A : B and B : C of the latter are *hypothetical concepts of the mind*—concepts which may be true or false (as may also the conclusion), without in the least invalidating the formula (see §§ 10, 32).

32. Some writers[1] have supposed that certain of the inferior animals are capable of syllogistic reasoning. This error arises, I think, from a mistaken idea as to the real nature of a syllogism, and one for which the ordinary text-books on logic are in great measure responsible. These usually express Barbara somewhat as follows: "All A is B, All B is C; *therefore* All A is C". The syllogism, or any other argument, thus worded *is not a formal certainty;* it is false whenever either of the premisses is false, whatever the conclusion may be; and it is also false when the conclusion is false, whatever the premisses may be. Barbara should be worded as follows: "*If* all A is B, and all B is C: *then* All A is C". In this form the syllogism is true whether premisses or conclusion be true or false (see § 10), and must, therefore, be classed amongst the *formal certainties*. Now, a statement is called a formal certainty when it follows necessarily from our formally stated conventions as to the meanings of the words or symbols which express it; and until a language has entered upon the propositional stage those conventions (or definitions) cannot be formally expressed and classified. No language but the human has as yet reached this propositional stage; and, therefore, no terrestrial animal except man is capable of syllogistic or other abstract reasoning.

[1] The late Prof. Max Müller, in his *Science of Language* (1861), speaking of a parrot that drops a light nut without attempting to crack it, supposes it to reason thus: "All light nuts are hollow; this is a light nut; therefore this nut is hollow". But the parrot's reasoning is much more elementary. It is only the simple implication, "*Light nut* implies *no kernel*"; an induction founded on perceptive experience, and *not necessarily* (or *formally*) *true*.

IV.—DISCUSSIONS.

THE ATTITUDE OF SPECULATIVE IDEALISM TO NATURAL SCIENCE.

Prof. Rücker's Presidential Address at the Glasgow meeting of the British Association last September and Lord Kelvin's speech after the delivery of that Address have called attention to a subject of some public importance—the attitude of Speculative Idealism to Natural Science. Prof. Rücker, in the course of a defence of the physical reality of atoms and ether, referred to Prof. James Ward's "unsympathetic account (in *Naturalism and Agnosticism*) of the blunders of those whose work, after all, has shed glory on the nineteenth century," and Lord Kelvin, speaking of Prof. Rücker's Address, said (as reported in the *Times*, 12th September, 1901):—

"They had heard a most eloquent, convincing and picturesque defence of atoms and ether against—what? He was afraid that rather jaw-breaking words must be used to describe what the defence was against. It was a most crude recrudescence of neo-pantheism which had grown up in the last ten years of the nineteenth century, and grown up in a manner singularly inconsistent with the bright and clear teaching of realities and faith in realities with which the century commenced, and with which the century had in the main been conducted."

It is plain from this incident that Lord Kelvin regards Prof. Ward and his allies, among whom are certain men of science—Prof. Rücker's 'puzzled mathematicians'—as opponents of science.

I have no intention of taking a side in the dispute, as one between scientific men—between Lord Kelvin, who maintains that ether and atoms are material entities, and the puzzled mathematicians, who tell us that they are descriptive formulæ in a conceptual system. It is enough for me to believe, with both sides, that science cannot get on without the mental faculties of men of science, and that it is their description of the facts. I am inclined to think that the dispute, so far as it is merely one between men of science, is largely verbal. But it is no merely verbal issue that Prof. Ward raises. He has other allies than the puzzled mathematicians; and acting with these other allies—

the speculative idealists, laymen as regards Natural Science, he goes on to build, mainly on the hint furnished by the puzzled mathematicians, a superstructure which, in Lord Kelvin's eyes, menaces science.

It will strike many people as strange that our speculative idealists, especially as represented by a distinguished psychologist like Prof. Ward, should be regarded as opponents of science. Like other educated men they seem to accept results of observation and experiment and mathematical reasoning vouched for by Lord Kelvin and other experts in Physics; and in Biology they seem to be Darwinians—without qualification so far as the lower animals are concerned, and with a certain reservation so far as man is concerned. It is true, of course, that their chief interest is not in the progress of Natural Science; but that, it may be urged, does not make them, any more than many other educated laymen, opponents of science. If they sometimes seem to dwell unsympathetically on the failures of science, and to give its discoveries a niggard welcome, as though of small importance, even that is not opposition in the serious sense intended by Lord Kelvin. He evidently means something more than mere lack of sympathy with science on the part of men, who after all, profess a general acceptance of its modern teaching. He means, I take it, that Idealism is an actively anti-scientific propaganda—that the educated lay opinion to which it appeals, especially in this country and America, is made by its teaching a climate noxious to the growth of Natural Science.

What ground has Lord Kelvin for thinking that the Idealists —described as neo-pantheists—are opponents of science in this serious sense? Let us see what they have to say against Lord Kelvin and Darwin.

Their objection to Lord Kelvin, as I understand it, is that he makes his ultimates—ether and atoms—physical entities, whereas they are descriptive formulæ; that is, he posits a 'material' not a 'spiritual' principle as ultimate foundation.

Similarly, their objection to Darwin is that he derives man's self-consciousness ultimately from a 'material' source, whereas it can be rightly explained only as 'reproduction' of an ultimate 'spiritual' principle—the 'Eternal Consciousness' which constitutes the World.

In other words, their objection to the science of Lord Kelvin and Darwin is that it is not "framed in a theological setting".[1] Natural Science or Natural History, they tell us, must be "re-written from the idealist point of view". The re-writing, as I understand it, is to be undertaken, not with the view of reaching, by some new method, scientific results in Physics and Biology,

[1] This phrase is Mr. Balfour's; but of course I do not class him with the Idealists, whose Philosophy, at least as set forth by T. H. Green, I understand him to reject, and to regard as incompatible with an effective Theism.

unattainable by Lord Kelvin and Darwin; but to vindicate "freedom of action and knowledge" which is declared to be impossible on the 'naturalistic' hypothesis. We are told, with much reiteration but little attempt at explanation, that unless we reject the "absolute opposition between mind and matter" assumed by Naturalism, and posit a 'spiritual' principle as foundation, we can have no 'Ethics'—no conduct as 'Ethics' must understand it, *i.e.*, no action determined by an 'Ideal'; and if no conduct, then no interest in truth—no science. Indeed the fact that men like Darwin and Lord Kelvin cultivate science at all, and reach results which are so far intelligible, is explicable only on the view that they implicitly assume a 'spiritual' principle as foundation. Were they consistent they would write 'spiritual' where they now write 'material'.

The Idealists then are certainly opponents of Lord Kelvin; but it is his Naturalism or Agnosticism, they will tell us—his non-theological philosophy rather than his science that they oppose.

It is not my object to inquire whether Lord Kelvin's Naturalism tends, as the Speculative Idealists aver, to the destruction of morality. My object is more modest—merely to inquire whether they are the proper people to bring such a charge, even if it were true. Is the content of their theology of the 'spiritual principle' such as to give them the right to come forward and accuse Lord Kelvin, however truly, of destroying the foundation of morality? It is the extraordinary ambiguity of their utterances which suggests and justifies this question. Careful reading of their works leaves me in the greatest doubt as to what the content of their theology is. I cannot make out whether their 'Spiritual Principle' is a 'Personal God' in the ordinary Christian sense, or an Impersonal (albeit Spiritual) Something. I begin by saying to myself that they would not blame Lord Kelvin so severely for ignoring their 'Spiritual Principle' if it were not a 'Personal God'. An Impersonal Spiritual Principle, I argue, is surely without theological value, and no better than mere 'matter'. The adherents of an Impersonal Spiritual Principle would surely show signs of compromising with the 'Agnostics' on the basis of some such phrase as *Deus sive Natura*. They would not oppose them bitterly, as our Idealists do. The conclusion that their Spiritual Principle is a Personal God, I say to myself further, seems to be borne out by the circumstance noticed long ago by Mark Pattison, and now plain to all observers, that the teaching of the Idealists is accepted with favour in ecclesiastical quarters. It is surely impossible to suppose that an Impersonal Spiritual Principle would be tolerated in these quarters. The theology which Lord Kelvin and his like are attacked for ignoring is, I say to myself, evidently thought in these quarters to include doctrines of God's 'Personality' and man's 'Immortality' similar to those held by Christians—especially, the reiterated assertion that 'Ethics' from the standpoint of Natural Science is impossible is taken in these quarters to pledge

the Idealists to these two doctrines. The Idealists, I say to myself, are regarded in these ecclesiastical quarters as offering 'philosophical' or 'speculative' support to traditional Christian doctrine; and those who accept this support even show their sense of its value by restating Christian doctrine in terms of the idealistic philosophy—at least this is how I read some recent theological writings. And then there is the extraordinary welcome which the latest considerable production of the idealistic school, Prof. Ward's *Naturalism and Agnosticism*—the occasion of Lord Kelvin's remarks—has received from churchmen. This, I say to myself, shows how thoroughly the school has won the confidence of churchmen. Thus I find a writer in the *Guardian* saying that "the limitation (for which Prof. Ward contends against the Agnostics) of the aim of science to description alters the whole relation of science to Theology". That is, Idealism is willing to leave Lord Kelvin with a free hand to frame concepts and descriptive formulæ, and to manipulate them as he thinks best for the advancement of science; and in return requires him to recognise a theology without which "freedom of knowledge and action" is impossible. Lord Kelvin, it is complained, will not fall in with this arrangement. He insists on treating descriptive formulæ as material entities, and leaves no place for this all-important theology.

These, then, are the considerations which make me think that the Spiritual Principle of the Speculative Idealists must be a 'Personal God': If it were not, they surely would not think it worth while to oppose Lord Kelvin so uncompromisingly; and churchmen would not accept their teaching so gladly.

But it is time to pass on from these considerations, for I have still to confess that, in spite of them, my reading of the works of the Speculative Idealists leaves me in the greatest doubt as to whether their Spiritual Principle is a Personal God in the ordinary Christian sense or an impersonal (albeit spiritual) Something. It is true of course that most of them habitually speak of their Spiritual Principle in language suitable (or not unsuitable) to the description of God as conceived by Christians. But do they mean us to take their language literally—and if so, is it, in its literal sense, warranted by their philosophy? I find that critics to whose opinion I am bound to attach weight hold that it is not warranted. I find that Mr. Balfour and Prof. A. S. Pringle-Pattison hold that T. H. Green's Philosophy at least is inconsistent not only with the personality of God in the Christian sense but also with the personality of man. Whether Mr. Balfour and Prof. A. S. Pringle-Pattison themselves supply a philosophical basis for these two doctrines, or really maintain them on other than philosophical grounds, I do not inquire; I merely take note of their view that these two doctrines are incompatible with the philosophy of T. H. Green and his immediate followers. I also take note of Mr. Bradley's view that the Ultimate Principle or Absolute, although

'Spiritual,' *cannot* be personal in the sense naturally conveyed by the language of our Idealists.

Am I then to interpret their maintenance of the doctrine of the 'Personality of God' as merely a case of 'adaptive resemblance' or 'mimicry' occurring in a philosophical system of which, if I am to believe Mr. Bradley, the Ultimate Principle or Absolute, though 'Spiritual,' cannot be personal in the sense naturally conveyed by the language used?

The following passages may be taken as typical of the theological manner of the Idealistic school:—

"There is an absolute Experience," says Prof. Royce (*The Conception of God*, pp. 42-49), "for which the conception of an absolute reality, *i.e.*, the conception of a system of ideal truth is fulfilled by the very contents that get presented to this Experience. This absolute Experience is related to our experience as an organic whole to its own fragments. . . . People think it very modest to say we cannot know what the Absolute Reality is. They forget that to make this assertion implies that one knows what the term 'Absolute Reality' means. . . . God is an Absolute Experience transparently fulfilling a system of organised ideas. . . . The foregoing conception of God undertakes to be distinctly theistic not pan-theistic. It is not the conception of any unconscious reality into which finite beings are absorbed; nor of a universal substance in whose law our ethical independence is lost; nor of an ineffable mystery which we can only silently adore. . . . What the faith of our fathers has genuinely meant by God is despite all the blindness and all the unessential accidents of religious tradition identical with the inevitable outcome of reflective Philosophy."

"No other principle," says Prof. Watson, "save one which is self-conscious can explain the existence of self-conscious beings; and as these include and yet transcend all other forms of being, the universe must be held to be when properly understood, self-conscious or rational. . . . We at last reach the idea of an absolute subject-object in which the distinction of subject and object is seen to be a distinction within an absolute identity. It may therefore fairly be claimed that Speculative Idealism proves the existence of God."

What am I to think of these brave words in the dry light of Mr. Bradley's critique?

"For me a person," says Mr. Bradley (*Appearance and Reality*, p. 532), "is finite or is meaningless. But the question raised as to the Absolute may I think be more briefly disposed of. If by calling it personal you mean only that it is nothing but experience, that it contains all the highest that we possibly can know and feel, and is a unity in which the details are utterly pervaded and embraced—then in this conclusion I am with you. But your employment of the term personal I very much regret. I regret this use mainly not because I consider it incorrect—that between

us would matter little—but because it is misleading and directly serves the cause of dishonesty.

"For most of those who insist on what they call 'the Personality of God' are intellectually dishonest. They desire one conclusion and to reach it they argue for another. But the second, if proved, is quite different and serves their purpose only because they obscure it and confound it with the first. And it is by their practical purpose that the result may here be judged. The Deity which they want is of course finite, a person much like themselves with thoughts and feelings limited and mutable in the process of time. They desire a person in the sense of a self, amongst and over-against other selves, moved by personal relations and feelings towards these others—feelings and relations which are altered by the conduct of the others. And for their purpose what is not this is really nothing. Now with this desire within itself I am not here concerned. Of course for us to ask seriously if the Absolute can be personal in such a way would be quite absurd. And my business for the moment is not with truth but with intellectual honesty.

"It would be honest first of all to state openly the conclusion aimed at, and then to inquire if this conclusion can be maintained. But what is not honest is to suppress the point really at issue, to desire the personality of the Deity in one sense, and then to contend for it in another, and to do one's best to ignore the chasm which separates the two. Once give up your finite and mutable person and you have parted with everything which for you makes personality important. Nor will you bridge the chasm by the sliding extension of a word. You will only make a fog where you can cry out that you are on both sides at once. And towards increasing this fog I decline to contribute. It would be useless in such company and in such an atmosphere to discuss the meaning of personality—if indeed the word actually has any one meaning. For me it is sufficient to know on one side that the Absolute is not a finite person. Whether on the other side personality in some eviscerated remnant of sense can be applied to it is a question intellectually unimportant and practically trifling."

Am I then to take Prof. Royce literally, and say that he maintains a Theism which (if Mr. Bradley is right) is philosophically impossible? Or am I to find Prof. Royce's true meaning in his reference to "all the blindness and all the unessential accidents of religious tradition," and understand him to indicate, for the discriminating reader, a conclusion more in accordance with his Philosophy—the conclusion that the Absolute is personal only in the sense of necessarily differentiating itself into persons?

If this is the conclusion which Prof. Royce and other Speculative Idealists are bound to maintain, and do in fact maintain for the discriminating reader, then, I submit, they ought to take him fully into their confidence. They ought to explain to him—what needs explaining very much—how this doctrine of a Spiritual

Principle, which is only personal in the sense of differentiating itself into persons, supplies the Believer with an Ideal of conduct to which the so-called Agnostic is blind. As it is, repeated assertion takes the place of explanation. Passages like the following occur over and over again in the writings of the school, and indeed form the staple of its teaching:—

"Science abstracts certain elements of reality from the rest. . . . The scientific moralist insists on taking moral facts in abstraction from their bearing on the whole theory of the cosmos. . . . To investigate the theological sanctions of morality is simply to go . . . from a partial to a complete view of the ethical problem. . . . The ought of morality is the dictation of the ethical whole to its parts, for the true nature of the parts is determined by the nature of the common whole."

If Mr. Bradley is right, this 'whole'—the source of the 'theological sanctions' which the 'scientific,' *i.e.*, naturalistic or agnostic, moralist ignores—is not a Personal God in the Christian sense. The most, it would seem, that can be said of it, on philosophical principles, is that, though not personal, in the sense of being itself a Person, it is Something which necessarily differentiates itself into persons—you and me: necessarily, "because" as we are told by a recent writer of the school "no other differentiations have vitality to stand against a perfect unity, and because a unity which was undifferentiated would not exist".[1]

Now, what needs careful explanation is how the 'theological sanctions' of which such a Something is the source make themselves felt—how precisely the moral experience of the man who comes under their influence differs from that of the man who does not, *e.g.*, from that of the so-called agnostic. What is the 'Ideal' of the man who comes under the influence of these 'theological sanctions'? This is an important point, for it is with the 'Ideal,' we are told, that 'Ethics,' as distinguished from the Natural History of Morals, is entirely concerned: "Ethics must content itself with understanding the nature of the Ideal, and must not hope to formulate rules for its attainment". What then is the 'Ideal' of the man who comes under the influence of the 'theological sanctions' supplied by the Impersonal Something which necessarily differentiates itself into persons? His 'Ideal' can hardly be to become more and more like the Absolute out of which he has been differentiated, for that is not personal in the sense of being itself a Person. Is his 'Ideal' then simply to go on being the Person he himself is? If so, how does his 'Ideal' differ from Spinoza's *in suo esse perseverare conari?*

So much on the supposition that the Spiritual Principle of Prof. Royce and other Idealists like him is what Mr. Bradley says it must be. If, on the other hand, it is not what Mr. Bradley says it must be, but a Personal God in the ordinary

[1] How precisely does 'vitality' differ from 'personality' in this argument?

Christian sense, let them make some serious attempt to meet Mr. Bradley's critique. Prophets I readily admit they are; but they profess to be philosophers, and to prove things. Let them show that the ascription of Thought and Will to their Ultimate Spiritual Principle or Absolute, as to a Personal God in the Christian sense is not, as Mr. Bradley contends, out of the question, but follows logically from their philosophical principles. Mr. Bradley is the really dangerous enemy. Let them make it their business to dispose of him in their rear, before they advance further against Lord Kelvin and the Agnostics. As it is, they seem to think it enough to express mild regret, in passing, that Mr. Bradley should not happen to see his way to ascribing personality to the Absolute; but they are unwilling to come to close quarters with him.

I hope it will be understood that I am not arguing for or against any particular form of theological doctrine. I am only complaining that the Speculative Idealists, while insisting on the importance of theology for morality and science, leave us in doubt as to what particular form of it they wish us to accept as outcome of their philosophy. They do not seem to realise that the repetition of the word 'Spiritual' (or its equivalents) does not help the critical student of their philosophy. He wants to know how, words apart, their 'Spiritualism' differs from Lord Kelvin's 'Naturalism'. The opposition 'teleological — mechanical' does not enlighten the student; for he has not been told what the τέλος or 'Ideal' is—he has only been warned that 'Ethics' must not think of formulating rules for its attainment.

The Glasgow incident will have done good if it makes people ask our current Idealist philosophers to explain in unambiguous language the content and philosophical foundation of the "theology" which they supply to their disciples, and attack men of science with. Explanation is especially due to those who are attacked. Their training in the natural sciences has made it peculiarly difficult for them to catch such meaning as Speculative Idealism sets forth. They have reason to complain that hitherto no real trouble has been taken to meet their case. They are attacked for neglecting they know not what. They can only defend themselves by hurling back charges of "crude neo-pantheism" which may or may not be deserved by their assailants. But although it is to the men of science attacked that explanation is properly due, I feel sure that even many persons who are experts in philosophy would welcome explanation on their own account; and it would be a godsend to young and other inexperienced disciples or proselytes of the Idealist School who suffer from a chronic puzzlement which debilitates the mental faculties, while it is mistaken for "philosophical interest".

J. A. STEWART.

V.—CRITICAL NOTICES.

The Use of Words in Reasoning. By ALFRED SIDGWICK. London: Adam and Charles Black, 1901. Pp. xi., 370.

IN the present book Mr. Alfred Sidgwick argues with great force and keenness for a more thoroughgoing analysis of Language in Logic considered as an Art—the Art of detecting and avoiding fallacy or "bad reasoning". Logic, he holds, is concerned with the difference between good and bad reasoning, and the Logic that is really useful and applicable in the cases where there is most danger of falling into fallacy is not the abstract "fair-weather" doctrine of traditional Formal Logic, at the best applicable only to 'average' cases, but an organon of a less obvious and more elastic and progressive type, directed to tracing out and unmasking those ambiguities of language to which, in his opinion, are due the confusions which are at the root of our mistakes in reasoning.

We may say, perhaps, that Mr. Sidgwick does three things in his book. First, he attempts to show how great are the defects of Formal Logic, and how little it deserves the important position which has long been, and still is, claimed for it by thinkers who regard themselves as Logicians. Secondly, he expounds the Progressive Logic which, in his view, would worthily replace, from a philosophical point of view, the futilities of the Formal Scheme; and thirdly, he tries to indicate briefly how this Progressive Logic could be so adapted for teaching purposes as to make it both possible and advantageous for the teacher of Logic to set aside all 'Formal' Text Books, and train his pupils from the beginning, in the use of the more concrete, subtle and flexible instrument.

The central doctrines, the strongholds of Formal Logic—such as the Laws of Thought, and the Theory of Syllogism—are declared on the one hand to suffer from a falsifying and sterilising abstractness—a disregard of the conditions of actual living thought, in which the matter and context are all-important, and, on the other hand, to be of a useless and truistic character, as a formulation of what all of us do and have done and must do, in thinking, from the very dawn of reasoning consciousness—what no one is ever in any danger of *not* doing, so far as conscious thinking is concerned.

Not indeed that Logic, more than any other Science, can do

without rules and general statements; but the laws of Formal Logic, like the laws of other Sciences, if taken in any applicable (and therefore disputable) sense, are liable to exceptions, to refinement, to improvement—and the spirit of Formal Logic is opposed to this—to the critical but wholesome attitude of using a general rule "with an eye upon its faults," of "welcoming the discovery of exceptions to the rules" instead of avoiding them. Briefly, what Mr. Sidgwick contends as against Formal Logic, is that "both the certainty and the simplification [at which it aims] are in their different ways delusive; that the only perfect axiomatic certainties of Logic are empty truisms of a practically misleading kind; that the assumptions by means of which simplification is hoped for, lead to unexpected complication and confusion; and that any real simplification achieved by Formal Logic is obtained at excessive cost, since the practical value of Logic is thereby almost destroyed. Logical theory, thus simplified, is applicable only to the flattest and least disputable cases of reasoning. Exactly where Logic is wanted, to improve upon common-sense views, Formal Logic breaks down." To put an argument into, *e.g.*, the form :—

All M is P.
All S is M.
therefore All S is P.

is no sufficient safeguard against fallacy, for our Middle Term may really not mean the same in one premiss that it does in the other—the place of difficulty, the place where the help of Logic is wanted to re-inforce mere customary insight, is in *getting* the premisses—in making sure that the M of the one premiss coincides with the M of the other. When this is accomplished, the fitting of our information into the universal form is a matter of no difficulty.

Again, in practice we proceed by either 'reflective' or 'forward' reasoning (to use Mr. Sidgwick's terms)—*i.e.*, we seek to justify (or overthrow) some assertion regarded as open to question, or we endeavour to reach some new conclusion. *E.g.*, we start with S is P, and try to prove or disprove *S is M*, and *M is P*. Or, starting with *M is P*, we try to trace its results when taken in conjunction with other assertions. "While forward reasoning starts from facts accepted as true, and asks what unseen conclusions they point to, reflective reasoning starts from a questioned conclusion and examines its truth by exploring its grounds." And while a Syllogism of correct form may be in fact faulty from want of sufficiently careful preliminary analysis, one which is invalid in *form* may be used to express an argument which as it occurs in the mind of the speaker is really cogent. *E.g.*, when from the premisses "Bad workmen complain of their tools, and X complains of his tools," a person draws the inference that "X is a bad workman," we should, Mr. Sidgwick holds, most reasonably conclude that the thinker in question argues validly from a

false major premiss to his false conclusion—"the *reasoning* was correct, but one of the statements was taken in a sense which made it false"—the defect was in his "conception of the subject matter". He took "Bad workmen complain of their tools" to involve "all who complain of their tools are bad workmen". In both cases *words* and verbal forms (or symbols if we use symbols) are sources of error. Our *thought* is always coherent, but the ambiguities of language, with its inevitable but often misleading vagueness of generalisation, help to hide from us the complexities of fact.

Similarly in 'Induction,' the abstract Canons of Mill's *Methods* are very easy to apply wrongly. The guarantee that an Induction by any of the Methods is correct, is to be sought, not in the Methods themselves (which are as familiar in common thought as the Syllogism itself), but in the care, knowledge and wisdom with which they are applied to concrete cases. Here again, it is on the preparation of material that we need to fix attention, rather than on the 'form' into which it is to be fitted. When, *e.g.*, by an application of the Methods of Difference, we have reached an inference that is false, our fault has been due to insufficient analysis. We may have taken the "one circumstance" supposed different in the two cases to be A, whereas 'A' covered a mixture of circumstances some of which were, and some not, essential to the production of A; the vagueness of our terms has permitted and veiled a misleading ambiguity. And the danger of ambiguity in all reasoning, and the degree in which the value of Induction depends upon previous knowledge, are points which a Logic tends to neglect in proportion to its 'Formality,' while the harm worked by ambiguity is due to the misconception by Formal Logic of the true nature of ambiguity. This misconception may be traced, partly to the idea that ambiguity belongs to *words* isolated from context and not to the assertions in which such words are used, and partly to a confusion between indefiniteness (which necessarily pertains to *all* descriptive words), and ambiguity (by which any descriptive word *may* be affected when used in assertion).

"The tendency to contentment with formality must," we are told, "be towards contentment with inefficient discrimination between good and bad arguments. . . . What can be expected from a system which does all it can to neglect those difficulties of interpretation, and those defects of language, to which most of our lasting differences of opinion are due, and which does all it can to make mechanical rules take the place of thought?" To restrict the sphere of Logic to the manipulation of sentences already put into "logical form," is no doubt to cut off many sources of difficulty, but in Mr. Sidgwick's view certain assumptions of Formal Logic—that the logical character of a word, or assertion, belongs to it independently of its context, that sentence and assertion are the same thing, and that the reasoning process is distinct from its subject-matter—are responsible for much complication

and confusion in the account which Formal Logic gives of its technical terms. Mr. Sidgwick discusses and illustrates this contention with reference to *connotative*, *general*, *concrete*, and *abstract* names, *universal*, *singular*, *particular*, *affirmative* and *negative* assertions; *essential* and *accidental*, *categorical* and *hypothetical* propositions; *Deduction* and *Induction*, *Categorical* and other syllogisms, *Mediate* and *Immediate inference*. There is indeed no room to deny that dispute and difficulty beset the definition of all these terms, and Mr. Sidgwick does not fail to recognise that this largely corresponds to the genuine difficulty of adequate analysis and clear insight in these cases, and that many definitions offered in logical text-books are the result of prolonged consideration and careful discussion—while again he would not deny that the 'formal' logician might be ready to set aside or modify traditional and accepted definitions, if any particular change were suggested that seemed to him to be really an improvement.

But Formal Logic is credited with a "tendency to minimise and neglect difficulties of interpretation," using propositions as its material only when they have been put into "logical form"—and hence making use of a rigid scheme of interpretation which depends on the form of propositions and arguments—a plan which takes for granted the preliminary careful analysis which is often the most difficult part of the business, and tends to make people slack in going behind the forms, mechanical in the interpretation of them, and unsuspicious of ambiguity. It also, according to Mr. Sidgwick, tends to foster an unnecessary elaboration of syllogistic doctrine, and of Immediate Inference. If we gave due weight to the process of translating sentences into logical form we should, he says, not stop at *S is P*, but work our sentences at once into premisses in the first figure, premisses expressed in the predicative form.

Besides the illusoriness of its simplifications and the unimportance of its doctrines, traceable to want of due care in guarding against the ambiguities of language, Mr. Sidgwick charges Formal Logic with being unprogressive and even obstructive to progress, in that it attempts to base itself on axiomatic certainties—*e.g.*, the Laws of Thought and the Law of Causation. These axioms, he holds, are rather the starting-point than the foundation of Logic. "In stating them all that Formal Logic does is to put into words the pre-suppositions with which every human being begins his life-long investigation of the facts of the Universe. In a vague way we learn the axioms of Logic almost before we learn to speak, and a few years later we are freely engaged in applying them, with small reflection upon the possibility of their being misapplied. The rest of our life is spent in finding out, by slow and disconcerting experiences, the snares of their application. What we want, therefore, from a Science of Logic is not a reminder that the axioms are (in the abstract) perfectly true, still less an optimistic assurance that we need not think of them as misleading; rather, we want a careful exposition of the ways in which, when applied,

they actually mislead us—of the occasions when they break down. We all know that A is A; what we do not know, at first, is that all errors in reasoning, where the reasoning is anything more than a pretence, may be reduced to the one error of taking some so-called A as really deserving the name".

Again, any statement of the axioms is bound to be ambiguous. *E.g., A is A* may mean *real A is real A*, or *so-called A is real A*. Such ambiguity, in as far as it is not recognised as such, "lends support, by allowing a shift between the abstract and the applicable meaning, to the extremely shaky assertion that things are what they seem to be, or what most people take them for".

With regard to the question how Logic might be taught, Mr. Sidgwick offers some suggestions in chapter xiii. "A doctrine," he says, "that would form a useful starting-point is, that all descriptive names, as such, are indefinite; but we should cause unnecessary difficulty if, at first, we raised the question what precisely is a descriptive name. Later, the student will discover that a descriptive name is nothing else than the middle term of a syllogism; but at first this would not easily be made clear to him. Therefore it seems permissible to begin by roughly identifying the descriptive name with the kind of name which grammar recognises as a general name, class name, or common noun, merely explaining that this account of it, though mainly correct, contains a certain amount of error which may, for the moment, be neglected."

Before pronouncing an opinion on the suitability for beginners of a text-book of Logic on such lines, we should need to ask, not only how could the scheme be worked out, but also for what sort of students it would be appropriate.

Mr. Sidgwick, at the end of chapter xii., appeals for a defence of Formal Logic—a general challenge which I cannot profess to take up here—only making one or two remarks on a couple of points.

(1) Possibly, from Mr. Sidgwick's own limitation of the charge, a certain amount of defence may be extracted. For he says that his objections are "intended to lie against *contentment with formality* rather than against formality *per se*". This spirit of contentment with formality I do not desire to defend. Wherever doubt arises, or inadequacy, confusion or incoherence are found, Logic is, I believe, as much called upon to reform or develop as any more 'concrete' and restricted branch of knowledge. The antithesis of formality, as Mr. Sidgwick uses it, is judging individual cases upon their merits—but, of course, as he himself says, even individual cases can only be judged by help of general rules, and he by no means suggests that a Progressive Logic or any other study can dispense with principles and rules. His main complaint is that Logic as currently taught fails to provide effective safeguards against the fallacies which lurk behind ambiguities of language, and that it, at the same time, sets itself up as a sort of complete

and impregnable doctrine, based upon certain and self-evident laws, thus adopting an attitude of hostility to improvement and development. He does not deny that, for Thought, the Laws recognised by traditional Logic are valid.

(2) While as regards *A is A*, I have not a word to say for it, and (with Mr. Bosanquet) prefer *A is B*, if a choice must be made between the two,—I must observe that *A is B and A is not B cannot both be true* seems to me to be important, not only as inevitable and fundamental in all the refined applications of a Logic directed to the cure of ambiguity, but also as furnishing the very criterion, by reference to which, in the majority of cases, the suspicion of ambiguity is aroused. We do not suspect ambiguity without some cause, and it is some appearance of incoherence of expression (and inconsistency is the most violent kind of incoherence) that stirs us to doubt and investigation. This I do not understand Mr. Sidgwick to deny, but he makes an objection to this 'Law' similar to that which he makes to the Law of Identity. "In the abstract it is," he says, "of course undeniable that if an assertion is true its contradictory must be false, and *vice versâ;* that is an explanation of the meaning of the word 'contradictory'. But what does this tell us about actual assertion? Since the assertion is not the sentence but the *meaning of the sentence,* to say that we cannot at the same time assent to and deny an *assertion* is no more than to say that our intended meaning . . . really is intended. On the other hand, it is not sure that of apparently contradictory *sentences* both at once cannot express a true assertion, and this is the only way in which the Law of Contradiction can be made applicable, since examples of assertion take of necessity the form of sentences" (p. 163).

To the statement that to assert the abstract Law of Contradiction is merely "an explanation of the meaning of the word 'contradictory,'" I would reply that no doubt contradictory propositions may be defined as propositions which cannot both be true (nor both false), but that here the word defined expresses a meaning which is very important—a meaning which has 'reality' of a very fundamental kind—the definition embodies an 'undeniable truth'. Again, to say that *A is B and A is not B* cannot both be *true*, is, it is declared, "*no more* than to say that our intended meaning really is intended". I should answer that (granting this) an intended meaning is often vague, hazy, incoherent, and an assertor may forget at one moment what he asserted the moment before—so that though any one cannot perhaps, at a given moment, consciously assert or intend a palpable contradiction, he often is not quite clear what he does intend, and often intends to-day something which conflicts with what he intended yesterday. A man may accept "contradictions which he does not see". So that a reference to the abstract law, which ought to be applied in all cases, may be a valuable and very much needed reminder. When again it is said that "it is not true that of apparently contradic-

tory *sentences* both at once cannot express a true assertion," this is no doubt quite undeniable, and it is also undeniable that generally it is only to *sentences* that "the Law of Contradiction can be made applicable, since examples of assertion take of necessity the form of sentences". But it remains true, that the 'abstract' Law of Contradiction is supreme, and we have to take every means in our power—by careful thought and careful use of words—to ensure that we do not through lapse of memory, or vagueness, or stupidity, or by slipshod use of language, infringe it. Sentences are not *mere* sentences, and if sentences contradictory in expression, are not contradictory in meaning, then the expression used needs reform—for even granting that the speaker himself never *intends* a contradiction, if the forms he uses are contradictory, a hearer may no doubt attribute a contradiction to him, and he is also liable to confuse himself.

Mr. Sidgwick's positive doctrine certainly seems to me to be original, full of interest and suggestion, and of real practical value and importance for the avoidance of "bad reasoning". He would allow that much confusion of thought is no doubt due to ignorance, idleness, forgetfulness, want of wide grasp, clear vision, and power of concentration, in the individual mind, rather than to those shortcomings of the average mind which have infected language—but in all cases the *word* is the only convenient handle by which to lay hold of thought, and pin it down for investigation. That all "good reasoning"—when we have got it—goes into the forms of traditional Logic is of course admitted, and I am of opinion that an express theory of good reasoning is in itself of extraordinary interest, if only as formulating what we do or try to do all our lives, and that in all the trouble that we take to clear up in detail our own thoughts or those of others, we have this ideal in view.

In brief, I think that there is room and need both for a theory of good reasoning (though the theories we have may be open to improvement), and for a practical art of avoiding bad reasoning—and that perhaps no one has made more valuable contributions to the latter than the author of the book of which in the foregoing pages I have been attempting to give some account.

E. E. CONSTANCE JONES.

The Limits of Evolution and Other Essays Illustrating the Metaphysical Theory of Personal Idealism. By G. H. HOWISON, LL.D., Mills Professor of Philosophy in the University of California. New York: Macmillan, 1901. Pp. xxxvi., 396.

THE essays contained in this volume are seven in number: The Limits of Evolution; Modern Science and Pantheism; Later German Philosophy; The Art Principle as Represented in Poetry; The Right Relation of Reason to Religion; Human Immortality,

Its Positive Argument; and the Harmony of Determinism and Freedom. The connexion between them consists in their illustration of a metaphysical system which is, in many respects, so novel that it will be well to begin by quoting almost the whole of the summary given in the Preface.[1]

"I. All existence is either (1) the existence of *minds*, or (2) the existence of *the items and order of their experience;* all the existences known as 'material' consisting in certain of these experiences, with an order organised by the self-active forms of consciousness that in their unity constitute the substantial being of a mind, in distinction from its phenomenal life.

"II. Accordingly, Time and Space, and all that both 'contain,' owe their entire existence to the essential correlation and co-existence of minds. This co-existence is not to be thought of as either their simultaneity or their contiguity. It is not at all spatial, nor temporal, but must be regarded as simply *their logical implication of each other in the self-defining consciousness of each.* And this recognition of each other as all alike self-determining, renders *their co-existence a moral order.*

"III. These many minds, being in this natural recognition of their moral reality the determining ground of all events and all mere 'things,' form the eternal (*i.e.*, unconditionally real) world, and by a fitting metaphor, consecrated to the usage of ages, they may be said to constitute the 'City of God'. In this, all the members have the equality belonging to their common aim of fulfilling their one Rational Ideal; and God, the fulfilled Type of every mind, the living Bond of their union, reigns in it, not by the exercise of power, but solely by light; not by authority, but by reason; not by efficient, but by final causation,—that is, simply by being the impersonated Ideal of every mind.

"IV. The members of this Eternal Republic have no origin but their purely logical one of reference to each other, including thus their primary reference to God. That is, in the literal sense of the word, they have no origin at all—no source in *time* whatever. There is nothing at all, prior to them, out of which their being arises, — they are not 'things' in the chain of efficient causation. They simply *are*, and together constitute the eternal order.

"V. Still, they exist only in and through their mutually thought correlation, their eternal 'City,' and out of it would be non-existent. But through their thought-reciprocity with each other, God being included in the circle, they are the ground of all literally originated, all temporal and spatial existences.

"VI. Hence, relatively to the natural world, they are free, in the sense of being in control of it: so far from being bound *by* it and its laws, they are the very source of all the law there is or can be in it. Relatively to God also, and to each other, all minds other than God are free, in the still higher sense that

[1] P. xii. The italics are the author's.

nothing but their own light and conviction determines their actions toward each other or toward God. This freedom belongs to every one of them in their total or eternal reality, be it burdened and obscured as it may in the world of their temporal experience; and its intrinsic tendency must be to fulfil itself in this external world also.

"VII. This Pluralism held in union by reason, this World of Spirits, is thus the genuine *Unmoved One that moves all Things.* Not the solitary God, but the whole World of Spirits including God, and united through recognition of him, is the real 'Prime Mover' of which since the culmination of Greek philosophy we have heard so much. . . .

"IX. These several conceptions, founded in the idea of the World of Spirits as a circuit of moral relationship, carry with them a profound change in our habitual notions of the creative office of God. Creation, so far as it can be an office of God towards other spirits, is not an *event*—not an act causative and effective in *time.* It is not an *occurrence*, dated at some instant in the life of God, after the lapse of æons of his solitary being. God has no being subject to time, such as we have; nor is the fundamental relation which minds bear to him a temporal relation. So far as it concerns minds, then, *creation must simply mean the eternal fact that God is a complete moral agent*, that his essence is just a perfect CONSCIENCE — the immutable recognition of the world of spirits as having each a reality as inexpugnable as his own, as sacred as his own, with rights to be revered; supremely, the right of self-direction from personal conviction. This immutable perfection of the moral recognition by God, let it be repeated, is the living Bond in the whole world of spirits. Did it not exist, did God not exist, there would be, there could be, no such world; there could be no other spirit at all. *Real creation*, then, *means such an eternal dependence of other souls upon God that the non-existence of God would involve the non-existence of all souls, while his existence is the essential supplementing Reality that raises them to reality; without him, they would be but void names and bare possibilities.* Thus in the Divine office designated 'Creation,' exactly as in that denoted by 'Redemption' or 'Regeneration,' the word is a metaphor; but in the one case as in the other, it symbolises a reality, eternal and essential, of a significance no less than stupendous.

"X. The key to the whole view is fixed in its doctrine concerning the *system* of causation. It reduces Efficient Cause from that supreme place in philosophy which this has hitherto held, and gives the highest, the organising place to Final Cause instead. Final Cause becomes now not merely the guiding and regulative, but actually the grounding and constitutive principle of real existence; all the other causes, Material, Formal, Efficient, become its *derivatives* as well as the objects of its systematising control."

Such is the system which Dr. Howison expounds in this work—

not very systematically, but still with great clearness, and with a force and enthusiasm which never become merely hortatory. The standpoint throughout is that of a student, and not of a preacher. Nor is the system unworthy of enthusiasm. There is much in it which it would be good to believe. It establishes immortality on a far firmer basis than is possible on the more common theory by which men are only the creatures (in the ordinary sense, not Dr. Howison's) of a God who is the sole Supreme Reality. "It is impossible for God to be God, apart from souls and their immortality and freedom" (p. 75). And, on the other hand, it offers a God of whom personality, morality and affection can reasonably be predicated, since, though perfect, he is finite. (I am not sure if Dr. Howison would accept the word finite, but in effect, it seems to me, he holds God to be finite, since he makes him one of a community of spirits, each of whom has "a reality as inexpugnable as his own".)

The proof naturally falls into two divisions. (1) Is the ultimate reality a "City of God," consisting of a plurality of finite and eternal beings, of whom each of us is one? This, according to Dr. Howison, is, in logical order, the first question to be answered. And then (2) is one of these Spirits a perfect being, the type and end of all the rest, who may fitly be called God?

For the first of the problems Dr. Howison thinks that a solution can be found in the demonstration of an Idealism closely resembling Kant's. "Our discussion," he says (p. 304), "in proving Time to be an expression of each mind's spontaneous activity, proves the self-active existence of every mind as such, and so establishes the eternity of the individual spirit in the only ultimate meaning of eternity; since as the ground and source of Time itself, the being of the soul must transcend Time, though including Time."

Two points suggest themselves here. The first is that, while Dr. Howison follows Kant up to a certain stage, he then abruptly separates himself from him. He treats Time as an *a priori* form of experience, and draws Kant's conclusion that the self cannot be in Time. But Kant goes on from this to the further conclusion that the self cannot be known at all by the Pure Reason, while Dr. Howison, on the other hand, maintains that it can be known by the Pure Reason to exist, and to exist eternally. It would surely have been better if Dr. Howison had given his reasons for rejecting his master's criticisms on the Paralogism of Pure Reason. As far as I can see he simply ignores them.

The other point is perhaps more serious. Time is an expression of each mind's spontaneous activity, and, therefore, if I understand the argument rightly, it cannot apply to the mind itself. But surely such ideas as Unity, Plurality, Final Causality, Organic Unity, are in the same position. These are clearly not part of the matter of intuition, and what else, on the principles of Kant and Dr. Howison, can they be except forms of experience? Yet the latter does not regard the self as transcending them, for he describes the selves, and the City of God which they constitute, in

terms of those ideas, while refusing to describe them in terms of Time. He has doubtless good reasons—many could be suggested—for treating these categories as more adequate to reality than Time is, but they are not brought out, as far as I can see, anywhere in the book.

I cannot but think that Dr. Howison could have proved his position much more strongly if he had started from Fichte or Hegel instead of Kant. We are told in the Preface (p. xxvii.) that the earlier essays were originally more Hegelian, but that this element was eliminated when the author became aware of the hopeless contradiction between Hegelian monism and the affirmation of personal reality and individual freedom. I doubt very much whether any monism to be found in Hegel's Logic is incompatible with personal reality and individual freedom. But even if my doubt is unfounded, it would be possible to look at the relation of the categories to experience from the standpoint of Hegel, and yet to leave as ample a place for personal reality and individual freedom as could be found in any possible Idealism.

Dr. Howison never allows his keen practical interest in his conclusions to masquerade as a reason for believing in them. "The unfavourable bearing of a doctrine on hopes indulged by man cannot alter the fact of their truth" (p. 5). But, he goes on to point out, "we have at least the right, and in the highest cases we have the duty, to demand that we shall know what its bearings on our highest interests are. If the truth bodes us ill that very ill-boding is part of the whole truth; and though, unquestionably, we should have to submit to it, even though it destroyed us, it cannot follow that we could approve of it, or that we ought to approve of it."

It is not, therefore, as an argument, but only as an important truth, that we are to count his very profound remark that only an eternal being can really be free. A being who is created (in the ordinary sense of the word) by another has his entire character determined by the will of that other being. It is to his creator, and not to himself, that his actions must in the last resort be attributed. On the other hand, a being who exists eternally in his own right acts from his own nature and from nothing else. This ensures that his action is really spontaneous, and, in the case of a conscious being, the spontaneity must take the form of choice. These two requisites are all which are required for freedom, since the freedom of caprice is equally impossible and undesirable (pp. 319, 332).

We must now consider the second question—among the eternal selves is there one, and one only, which is perfect, and which is rightly called God. Here Dr. Howison agrees very closely with Leibniz. Speaking of the number of souls he says "the series must certainly run through every *real* difference, from the lowest increment over non-existence to the absolute realisation of the ideal Type" (p. 354). Among the different grades which are thus really possible, and exist, Dr. Howison assumes that the highest grade of all—that of the ideal Type—is one, and consequently that a being exists

who realises the Type. (So far as I can see he does not attempt to prove this, and, indeed, it might be difficult to find a proof which did not prove too much, by demonstrating not only that the perfect being was possible, but that all others were impossible.) All the rest of the vast number of beings (a number, however, which is finite, p. 354) must be differentiated from the perfect being. And this can only be done by means of a degree of imperfection in each of them. "The personality of every soul lies precisely in the relation . . . between that genuine infinity (self-activity) which marks its organising essence, and the finitude, the exactly singular degree of limitation and passivity, to which the infinity subjects itself in defining itself from God" (p. 363). Thus there is one perfect being and one only.

The weakness of this argument, it seems to me, lies in the assumption that beings who were equally perfect could not be different from one another. What is there to prevent them from being equally perfect in different ways? This might, indeed, have been impossible for Leibniz, whose selves were monads, entirely isolated from one another. But Dr. Howison's selves are not monads. They are united in the City of God, and this not externally but as a necessary part of their nature. Outside that union they could neither exist nor be conceived. And in this more than organic unity differentiation need not involve—if, indeed, it does not exclude—the inferiority of one to another.

I cannot agree, therefore, with Dr. Howison in holding that only one being could be perfect. And, going further, I would venture to suggest two questions. We have been told that all the selves are eternal. Can that which is imperfect be eternal? Again, we have been told that all the selves form an intimate unity. Can one member of such a unity be perfect while the rest are imperfect?

On these grounds I should be inclined to say that not one but all of the souls in the City of God must be held to be perfect. If an opponent should remind me of the notorious imperfections in the present lives of each of us, I should point out that every self is, as Dr. Howison calls us, in reality eternal, and that its true qualities are only seen in so far as it is considered as eternal. *Sub specie æternitatis*, every self is perfect. *Sub specie temporis*, it is progressing towards a perfection as yet unattained. The sceptic might find a difficulty in the assertion that the perfect manifests itself in the imperfect. But this should prove no difficulty to those who agree with Dr. Howison that the eternal manifests itself in the temporal.

Such a view as this would be condemned by Dr. Howison as "apeirotheism" (p. 361). I think that it would be more fitly called pantheism, since it would rather be the City of God than the individual souls which had replaced the personal God of orthodox theology. But I submit that the word God and its derivatives are inappropriate in describing both this view and that of Dr. Howison. Ever since the spread of Christianity God has meant, for the

western world, a person who is the sole self-existent being. Popular usage would not recognise as God any being who was not a person, or who was not the only self-existent being, by whom all things else were made. And, in the case of a word which is used by all mankind, philosophic usage should conform to that of ordinary life. It can only lead to confusion that Spinoza should have spoken of an impersonal Absolute as God. And it can, I think, only lead to confusion that Dr. Howison should apply the same name to a member of a community of self-existent souls, even though it is the only perfect member.

It is rather difficult to discover whether Dr. Howison considers that God's superiority over the other souls is permanent. That it should be permanent seems required by the general tenor of the argument and by the passage quoted above from page 363. On the other hand, in an earlier essay he speaks of the grace of God which "accords to its object the prospect of equality with the source of it" (p. 248). And again of the "potential equality with God" of all spirits.

I have left myself no room to comment on the other subjects touched on in this most remarkable work, but I cannot close without expressing a special admiration for the essay on the "Right Relation of Reason and Religion," and for the delicate and courteous humour of the remonstrance with Dr. William James (p. 372). For the book as a whole all students of philosophy will be grateful to the author, and, outside the ranks of specialists, it ought to attract much attention and do much good.

J. ELLIS McTAGGART.

Studies in the Hegelian Cosmology. By JOHN McTAGGART ELLIS McTAGGART, M.A., Fellow and Lecturer of Trinity College in Cambridge. Cambridge: University Press, 1901. Pp. xx., 292.

READERS of *Studies in the Hegelian Dialectic* must have been moved to hope for a complementary set of "studies" from the pen of its brilliant author when they read his short, but pregnant, final chapter on the practicability of applying the conclusions of Hegel's Logic to the solution of concrete problems. Such an application, it was there suggested in conformity with the Hegelian tradition, might have either of two objects—the determination of the nature of ultimate reality, or the interpretation of the facts of our daily life. These, then, are the two tasks that the present volume undertakes in a measure to fulfil. Cosmology means Applied Dialectic. And that, perhaps, is about as much as it does mean. So liberally indefinite is it in scope that it leaves us at liberty to range backwards and forwards as we will from heaven to our poor planet. At one moment we are at the sublime level of what M. Raoul de la Grasserie would call "Cosmosociology," as

when we inquire why the Absolute cannot say—I am. At the next moment we plunge into Sociology at its least cosmic, as when we consider how a caning may be in different ways both good and bad for the schoolboy. Indeed, seeing what prominence is given in Mr. McTaggart's philosophy to the distinction between the timeless and the temporal aspects of the universe, it seems a pity that he should not have found it convenient to group his topics under corresponding heads. As it is, the natural disconnectedness of these (to which allusion is made in the Introduction) is perceptibly enhanced by—shall we say?—art. Thus chapters ii. and iii., dealing respectively with human immortality and the personality, or rather impersonality, of the Absolute—the two sides of one and the same doctrine—go closely with chapter ix. on the Absolute as love; whilst chapter viii. on Hegelianism and Christianity, though perhaps primarily historical in its object, is, on account of its preponderating theoretic interest, most naturally studied in close connexion with the antitheistic conclusions of chapter iii. On the other hand, chapters iv.-viii., which severally treat of Pleasure as the moral criterion, punishment as purification, sin as the stepping-stone from innocence to virtue, and the relation of the individual to the so-called "organic" state, form, it is true, a homogeneous series, in so far as they are all concerned with the explanation of "particular finite events". But why make the Ethics and the Politics alternate? And, more especially, why put the chapter on the state last, when it is so obviously fitted to lead up to the verdict of a previous chapter, to the effect that Hegel's view of punishment is inadmissible in jurisprudence?

Conceding, then, to Reality, as in duty bound, the precedence over Appearance, let us first turn our attention to the transcendental group of chapters. In them, one may gather, Mr. McTaggart feels himself to be on relatively firm ground. But the ground is only relatively firm. Not that the absolute validity of the Hegelian Logic is ever in dispute. That is taken as granted; and no opportunity is offered to the critic of raising the previous question. Our author, however, unlike certain of his brethren, is prepared to regard the transition from Logic to Metaphysic as something of a leap into the air. A category of the Logic is one thing, the concrete example after which it is named is another. Thus Cognition (Erkennen), for which Consciousness is suggested as the more adequate expression, represents but an essential element in our actual Cognition, or Consciousness. Meanwhile, to distinguish essence from accident in the blurred experiences of present existence is uncertain work. Take the case of death. Death, as Mr. McTaggart has elsewhere said, in a sentence which only a believer in immortality or an Irishman could have written, is "one of the most prominent facts in the life of each man". Is, then, this prominent fact but an accident? That in heaven Consciousness will be manifested we know—if Hegel knew anything. But shall we, who manifest it now so imperfectly, be its final impersonators?

Mr. McTaggart decides that we shall. For the realisation of the Absolute Idea involves differentiations which have sufficient "vitality" to stand against the unity—for which the whole is just as much as they are for it; and such fundamental differentiations, he argues, are not imaginably other than the selves with which we credit one another. (How we come to discover selves in one another is a mere question of Origin, and need not detain us.) So much for the "that" of immortality. The "what" is another matter. To get the selves outside one another enough to leave them individual and yet inside one another enough to provide each with its complement of universe, proves a ticklish business, even when the goddess Substance descends from her machine to arrest the circular process, or when the self-justifying irrationality of certain (query—the highest?) forms of love is taken as a sign of its power to dispense ultimately with all determination from without. But our author makes a virtue of necessity. "The self is so paradoxical that we can find no explanation for it except its absolute reality"; the alternative being "complete scepticism". Well, it may be a case of neck or nothing when the good mare Logic is forced into jumping ditches. But why make her jump at all, when there is plenty of honest work that she can do on her four feet? As regards the other branch of this subject, the Absolute is explained on the analogy of a college. It is Trinity basking in a perpetual Long Vacation. The communing spirits interpenetrated by love constitute a universe each for each; and even as the unity is (literally) *for* the differentiations, so likewise are they (metaphorically) *for* the whole. Mr. McTaggart urges against Lotze's absolute whole of parts that while there is nothing in them which is not in it, there is something in it which is not in them; whereas the Hegelian category of Life requires unity and plurality to be in absolutely reciprocal relation. But surely his own Absolute simply inverts Lotze's. His absolute content is manifested, the substantial individuals manifest themselves. Mr. McTaggart, indeed, makes it as hard as he can for us to express this unlikeness intelligibly, since he will not suffer us to attribute either cognition or volition as such to ultimate reality. We cannot, therefore, say that the selves have uniqueness in that they are self-distinguishing or in that they initiate or support their own activities or states. Yet surely we can say at least this: that when they love they are the lovers whilst the Absolute is merely their love; that they are subjective-objective, whereas it is merely objective; that they are spirits and persons, and it merely spiritual and personal. But this is not perfect reciprocity of relation. Trinity may provide the dinner, but it is the Fellows of Trinity who eat it. And the use of these transcendental speculations? No use in particular, but a general use as follows. "The use of philosophy lies not in being deeper than science, but in being truer than theology—not in its bearing on action, but in its bearing on religion. It does not give us guidance. It gives us hope." It enables us to attain "to what

may be called the religious standpoint"—that is, apparently, to a standpoint from which we can say "that the Absolute is not God, and, in consequence, that there is no God". Of course things may seem to go wrong here and now—not that it "really" matters. But we know that "the gap between the perfect and the imperfect has to come in somewhere". So let us be philosophers, and seek peace and consolation in congratulating our true selves on the fine time—or rather timelessness—that they are having on the other side, where they can afford to be more independent in their attitude towards the Absolute than even Mr. Kipling's "gentlemen unafraid".

Turning now to the chapters that have regard to the phenomenal aspect of the universe, we reach a region of darkness which the Logic serves but to render the more visible. For perfection as an End may be, as we have seen, of general use as a ground of self-congratulation. As a Criterion, however, it is of no use at all, since Thesis and Antithesis bid for us by turns, and it may be that the next tack is destined to bear us, to all appearance, further than ever from the harbour. As Mr. McTaggart puts it, with a fine mixture of metaphors, "efforts to become perfect as the crow flies will only lead us into some blind alley from which we shall have to retrace our steps". Meanwhile, there is a curious parallelism between our author's conception of the relation of our heavenly selves to the Absolute and that of the relation of our earthly selves to society. The logical bond between the two views is possibly non-existent, but one cannot help suspecting a psychological connexion. Just as God is reduced to a content, so the state is reduced to a means. We are no longer "in the same childlike relation to the state as was possible in classical times". To us society is no more than a merely external means to the welfare of the individuals who compose it. Now God, we saw, could be compared with a college. Let society, then, be compared with a school. "The end of a school . . . is the well-being of the boys, and the boys from the school. Nevertheless, the school is not an end in itself. For boys leave school when they grow up, and the end of the school is their welfare throughout life, when they certainly will have left school, and may easily be completely isolated from all their old school-fellows." So too, then, there might be in store for us conditions of being that could only be realised when society itself had ceased to exist. Now such a view of society is obviously well adapted to lead up to Hedonism, the Hedonist being the man who holds that the one end of society is to make the sum of pleasures felt by its individual members, taken as isolated beings, as large as possible. Mr. McTaggart's position differs, indeed, from the one described in certain respects. He would, for instance, substitute "criterion" for "end". But the difference, if speculatively vast, is practically little or nothing. For, morally or politically, the Idea of the Good cannot help us to any decision whatever. Sup-

pose, for example, that we are discussing the question of the abolition of marriage. How copy the pattern laid up in heaven? For "in a world of pure spirit there could be no sexual desire, and in a world which was timeless there could be no propagation of children"—which "two elements," as our author justly observes, "have considerable importance when we are dealing with marriage". Hence nothing is left but to calculate the loss or gain of happiness that would follow from the change. For the "calculation" of pleasures—a better word, it is suggested, than "calculus," which "as a technical term of mathematics seems to imply a precision unattainable, on any theory, in ethics"—*does* give us a sufficiently definite criterion of action. What if pleasure be a mere abstraction? So is wealth. "No ship contains abstract wealth as a cargo. Some have tea, some have butter, some have machinery. But we are quite justified in arranging those ships, should we find it convenient, in an order determined by the extent to which their concrete cargoes possess the abstract attribute of being exchangeable for a number of sovereigns." Well, the question is too big to discuss here. Suffice it to say that the moral which seems to loom out through these disquisitions touching Appearance is that speculations about the changeless when applied to this world of change leave us very much where we were before. And, in particular, one cannot help suspecting that Mr. McTaggart was well disposed towards Hedonism and Individualism, ere ever he betook himself to Cosmology and essayed, as it were, to categorise Swedenborg.

One word more. Those who are least in sympathy with the underlying assumptions of the present treatise, and to whose minds its leading conclusions are therefore least capable of carrying conviction, cannot but gratefully acknowledge its remarkable power, lucidity, candour, and charm. Be its total effect as a piece of systematic thinking what it may, the book is at all events in respect to its contents considered piecemeal a veritable mine of good things. With the non-Hegelian, then, it is likely to rank as a philosophic classic no less than with the Hegelian. Meanwhile, the latter no less than the former may possibly tend to accord to it something in the nature of a mixed welcome. For, if Mr. McTaggart's exposition of his master's views be sound, there are Hegelians not a few and not the least representative that have strayed very far from Hegel.

R. R. MARETT.

Beiträge zur Akustik und Musikwissenschaft. Ed. by Dr. CARL STUMPF. Heft 3. Price, Mk. 6.50. Leipzig: Johann Ambrosius Barth, 1901.

IT is satisfactory to note the increasing number of contributors to this newly established periodical. The present number consequently covers so wide a field that it is difficult to predict to what

class of readers the journal will most appeal, to the scientific student of music or to the musically inclined physiologist, psychologist or physicist.

Perhaps the most interesting papers for the psychologist are two closely allied experimental studies by O. Abraham and K. L. Schaefer, on the maximum rapidity of consecutive tones; and by O. Raif on the maximum mobility of the pianist's fingers. In a succeeding paper O. Abraham applies the results gained by him above to the question of the persistence of tone-sensations, *i.e.*, the after-sensations of tones. In the experimental part of his paper the late Prof. Raif finds that the most practised and celebrated performers cannot play more than twelve consecutive notes per second. This limit of finger-mobility agrees closely with the results of experiments described in the first of the above papers, when Raif and Abraham, both gifted with absolute pitch-estimation, endeavoured to commit to paper a series of four or five notes produced from a very swiftly rotating siren. The greater part of Abraham and Schaefer's paper, however, is concerned with estimating the limit of rapidity with which two successive tones, played by a siren, can be heard distinctly. A siren, provided with two independent series of holes, is rotated with increasing speed until a point is reached where the two notes blend together. A similar set of observations is also made when the speed of rotation is lessened until the two tones can just be separately distinguished. The pitch of the lower of the two tones is determined at the required point by the questionable method of reliance on Abraham's absolute pitch-estimation (*absolutes Tonbewusstsein*). The duration of the tones is estimated by a simple calculation. The interval of the tones remains, of course, unchanged by the rate of rotation of the siren. Through a range of six octaves, save at the extreme limits, these experiments give an almost uniform result of 0·3 sec. for the minimum duration of each of two immediately consecutive tones. Abraham attributes to differences of method the contrary conclusions previously reached by A. Mayer and Urbantschitsch who, reckoning the number of interruptions necessary at different pitches to convert a single continuous into an interrupted tone and *vice versâ*, believed that the length of the pause necessary for the recognition of two identical successive tones is a function of the vibration-number of that tone. He also adopts the questionable hypothesis that higher tones produce a more intense sensation than lower tones of equal vibration-amplitude; and he argues therefrom that in Mayer and Urbantschitsch's experiments (why not also in his own?) two higher tones can follow each other more quickly than two lower ones, as the same requisite difference is still preserved between the intensity of the after-sensation of the first and the intensity of the second tone-sensation. After these and other criticisms of possible objections, Abraham submits the view, suggested by his and Schaefer's above experiments, that all tones have after-sensations of the same length, independent of

pitch. Surely he is here striving to make a science run which can scarcely yet walk. Can we be certain that the tones produced by his mouth-blown siren remain of constant intensity independent of pitch? The duration of the after-sensation of a tone must clearly depend on the intensity of that tone. Again, is it conceivable that the sum-total of the after-effects, produced by a tone of whatever pitch, upon the membranes and ossicles of the middle ear, on the apparatus of the inner ear, and on the peripheral and central nervous system, remains of constant duration? Finally, are we to suppose that the variable minimum duration (dependent on pitch) of a single just audible tone is time spent solely in "getting up steam" within the auditory apparatus; or does it not more probably determine to some extent the length of the after-sensation, which may consequently be similarly variable?

K. L. Schaefer contributes a more purely physiological paper on the determination of the limit of the lowest audible pitch. He attacks the problem in two ways. In the one he employs difference-tones, in the other intermittence-tones; and he arrives at discordant conclusions. The method of difference-tones yields a fairly uniform result of thirty vibrations per second, while that of intermittence-tones gives a limit varying from twenty-five to sixteen vibrations per second, according to the pitch of the fundamental note, and according as the siren's disc is made of wood or metal. In the latter method, he calculates the lowest audible intermittence-tone yielded by a rotating siren, the disc of which contains a known variable number of plugged holes. To determine the pitch of the fundamental tone he relies on Abraham's faculty of absolute pitch-estimation. The variable results obtained by this method are perhaps due to over-reliance on the accuracy of his colleague's powers. However, the afore-mentioned dependence of the pitch of the just audible intermittence-tone on the pitch of the fundamental tone of the siren, and on the material of its perforated rotating disc suggests that the disc may itself give forth some low tone conditioned either by its material, its rate of rotation, or by the impact of frequently stopped vibrations against its surface. No doubt, by employing in his first method difference-tones produced by tones that are near the upper limit of pitch, Schaefer may claim to have avoided the past errors of Preyer and others, who have not been sufficiently alive to the presence of (audible) over-tones in addition to the (really inaudible) tone which they have supposed to be the lowest audible limit of pitch. Yet it is to be regretted that more tangible and less disputable means than intermittence-tones and difference-tones had not been available for the purpose. For the method of difference-tones, Schaefer uses two carefully graduated Galton-whistles, which bear scales so minutely divided that it seems absurd to place great reliance on the results. He sets the whistles so as to produce a just audible difference-tone. Then, by means of tuning-forks, he estimates the pitch of the difference-tone, which each whistle so set produces

with the other whistle, when set at a known pitch considerably different from either of them. The difference in vibrations of these latter two difference-tones gives the pitch of the just audible difference-tone first produced. It is remarkable that the results thereby obtained are confirmed by similar experiments undertaken with tuning-forks and other instruments at lower, and more easily calculable pitches, where overtones, although present, are not sufficiently intense to interfere.

Prof. Stumpf contributes a paper on subjective tones and double hearing,—a lengthy series of self-made observations on various pathological affections of his hearing during the past twenty-seven years. It is from certain aspects regrettable that he has not more clearly distinguished the subjective sensations, which preceded his attacks of otitis media, from those accompanying and following the illness and its attendant operations. He divides his subjective tone-sensations merely into two classes, the one being of almost constant pitch, usually localised in the right ear, and probably due to changes in intratympanic air-pressure, the other variable shorter tones of uncertain origin affecting either ear indiscriminately. He never observed two variable subjective tones in one and the same ear; but consonances and dissonances frequently occurred owing to the simultaneous affection of the two ears by variable and constant subjective sensations respectively. Dissonances also occurred during the binaural double-hearing which followed his second attack of middle ear-inflammation and paracentesis, when a given tone appeared slightly higher to one ear than to the other. In no case, however small the dissonance-intervals, were beats ever heard. This supports the view that beats owe their existence to changes in the air external to the tympanum.

Two laborious papers by P. v. Jankó on tempered scales of more than twelve notes and by Stumpf and Schaefer on calculated tone-vibrations, call for no remark. The two remaining articles are by the late Prof. Fillmore—a short description of twelve American-Indian songs—and by Prof. Stumpf on the music of the Siamese. The latter is a most elaborate, if somewhat diffuse, study of the subject, occupying seventy pages (nearly a half) of the current *Beiträge*. A Siamese orchestra visited Berlin in 1900. Their music was studied both at public and at private performances, and by aid of the phonograph. The pitch of their various instruments of percussion was determined by accurately tested tuning-forks. Musical experiments, not numerous enough to be conclusive, were made on some of the performers. A complete orchestral score was prepared by one of their pieces. Altogether the work is a model of what an accurate investigation into the music of a strange people should be. Stumpf's results confirm Ellis's previous conclusions that the Siamese divide their octave into seven equal intervals. The Javanese have a scale of five equal intervals. Stumpf supposes (but omits evidence) that in the middle tone region the distances of notes, whose vibration

numbers stand in a constant ratio, are not judged sensibly different, so long as the intervals are small and those of different tone-regions are not compared. He believes that the Siamese and Javanese, having decided to base their respective scales on the mystic numbers of seven and five, divided the middle tone-region accordingly into the required number of equal intervals. In Siamese music, at least, the sense of consonance has also had considerable influence. Fourths and octaves are frequently used in their orchestral pieces, and receive special names. The fourth is used in tuning their instruments, octave-notes being first tuned and then fourths from either end inwards. The intervals are sounded consecutively, not simultaneously, during tuning. The pure fourths thus obtained by the judgment of consonance are tempered by trial until equal intervals are given throughout the scale. Stumpf has previously shown that we ourselves prefer falsely exaggerated octaves and thirds under certain circumstances. He believes that the Siamese have similarly accustomed themselves to the exaggerated fourths and other intervals of their own scale. He notes that their whole tone, corresponding to our three-quarters of a tone, is offensive when replacing our semitone, but successfully passes for our whole tone; and that two of their tones compass an interval adjudged by us as a minor or major third according to circumstances. We are so far influenced by our own scale, where the intervals *c-e-g*, *c-g-b*, form respectively major and minor triads, that, in playing the first, third and fifth, and the third, fifth and seventh intervals of the Siamese scale, we fallaciously conclude that these really equidistant notes form major and minor triads also. In spite of a heptatonic scale, Siamese music is virtually pentatonic. Fourths and sevenths are almost wholly excluded. Stumpf regards the exclusion of these tones as a compromise necessitated by the conflict of equidistant intervals with the judgment of tone-consonance; he finds that the Siamese artificial fourths and sevenths are particularly objectionable to our ear, a seeming contradiction in view of the importance ascribed above to the former interval. Those who have studied elsewhere the music of savage and semi-civilised peoples may find it difficult to believe that method and culture were sufficiently advanced among the Siamese to enable what Stumpf supposes ever to have taken place. They may think that further work on a greater variety of instruments and on the music of allied races is needed before reliable judgments can be formed. But they will not refuse their cordial recognition of the great importance of the contribution to comparative music now before them.

CHARLES S. MYERS.

The Play of Man. By KARL GROOS. Translated, with the author's collaboration, by ELIZABETH L. BALDWIN, with a preface by J. MARK BALDWIN. London: William Heinemann, 1901.

PROFESSOR GROOS' theory of Play, as it was first put forward in *The Play of Animals*, has already become classical, and has met with so ready acceptance on the part of biology and psychology alike, that any detailed account or discussion of it is superfluous. In the work which is here translated, the theory is extended, or applied, to the Play of Man: at the same time many questions of æsthetics are touched, and suggestively treated, — the origin of Music, of Art generally, the nature and ground of our delight in Comedy, of our sober enjoyment of Tragedy—all of which are or have been held to be connected with the Play-impulse. In the part dealing with the System of Play, there is a valuable classification of the kinds of play, and an interesting collection of examples from all times and countries.

In deference to the criticisms of Baldwin and others, the theory in this second work departs in certain directions from its original form; the divergence is partly conscious and partly unconscious. While the biological criterion of play still stands,—that "it shall deal, not with the serious exercise" (of the instinct concerned) "but with practice preparatory to it," more stress is laid on the demand that this practice shall "respond to definite needs"—*i.e.*, a present want, and shall be "accompanied by pleasurable feelings". All the sub-conscious, or shall we say psychophysical, tendencies and dispositions with which the young animal,—the human most of all—is from birth endowed, need activity, exercise, and the need is felt. Thus the sensory regions (of the cortex?) betray their presence from the first by a feeling, or need, or impulse towards their corresponding stimuli: the satisfaction of the young in mere seeing, hearing, touching, still more in bright sights, loud sounds, varied touches, is an index both of a want that has been felt, and of a power that may be developed. So the "experimentation" of the child,—his restless pursuit and exploiting of things to see, hear, feel, and taste, as well as his equally restless pursuit of things to do,—is rightly brought under the Play-impulse: he is satisfying definite needs, hence the pleasure he derives from it, but at the same time he is exercising and strengthening his powers, before there is any serious use for them, and that is play. What is true of the senses is said to hold also of perception, even of memory, imagination, reason and will, while a large number of plays and games are skilfully arranged as examples of the playful exercise of those higher powers. There is a danger of the old "faculties" creeping into psychology by new paths. A need, a want, which "corresponds to," or is somehow connected with the presence of unstimulated sense-regions in the cortex, has enough analogy with the want of food to be comprehensible: but the analogy fails in the case of memory, imagination, and the rest. These cannot

have separate *areas* devoted to them; they have as their physiological basis only certain groups or forms of combination, of the sensory brain-elements. Before such groups exist, there can be no felt need arising from them, and the existence of one cannot constitute or give rise to a need for others. We surely cannot argue back from every satisfaction to a need which preceded it, and which was *felt*. Nearly all these higher forms of play can be explained without assuming a pre-existing, specialised need. Groos himself makes much greater use here of the *desire for conquest*, the love of combat, whether with one's neighbours, with external objects or circumstances, or with oneself,—"an essential element in all play". "Play leads up from what is easy to more difficult tasks, since only deliberate conquest can produce the feeling of pleasure in success" (p. 8); the "pleasure in overcoming difficulties is an essential feature of all play" (p. 39) and is traced to the fighting-instinct; of similar origin is the joy in being a cause, and, it may be added, the joy in finding causes, which every child shows. "There are many running games whose attraction consists in the difficulties to be overcome" (p. 84),—so of jumping games, of endurance-plays, and many others. Even in learning to walk, apart from the instinctiveness of the action, the element of delight in success greatly enhances the pleasure of the first beginnings (Froebel, p. 82). The pleasure of throwing in the many throwing-games is traced (with Sigismund, Souriau) to "the projection of our individuality into a wider sphere of action,"—*i.e.*, the extension of our power and consequent delight therein. Among higher powers, the pleasure of *recognition* was identified by Aristotle with that of solving a riddle: "this would make enjoyment of recognition identical with that derived from overcoming difficulties, and there can be no doubt that it is an important element in all art-appreciation, if it be not, indeed, the very kernel of æsthetic enjoyment"[1] (p. 125). So curiosity is traced to the "impulse to bring everything within our own powers" (p. 147). Even the enjoyment of the tragic, and of the comic, springs from the fundamental fighting instinct: with the tragic, it is joy in a combat with external forces, with fate, or with human weakness which we inwardly repeat (by *Einfühlung*, "inner imitation"): with the comic, the feeling of triumph in our own superiority over the subject of ridicule, blends with our inner imitation of the subject itself. We first become, in play, the incongruous, ridiculous thing, then recognise the superiority of our real self to our temporary play-self, and delight in the contrast. No doubt our interests largely determine in what directions the fighting-instinct shall be specialised, but these depend to an infinitely greater extent on tradition, education, and opportunity, than on inherited "dispositions" or "needs".

Again in the theory of Imitation, and Imitation-Play, Groos

[1] The German does not bear this out: presumably the change is accepted by Groos himself (v., p. 154).

has modified the view of *The Play of Animals*, where he classed imitation as an "instinct," a term he now discards for that of "impulse". An instinctive act must be a specific reaction to a definite situation or stimulus, whereas in imitation "we have a thousand varying reactions, for as the stimulus (the model) varies, the whole character of the reaction follows suit" (p. 284). The impulse is accounted for (1) by the psychophysical adjustment under which the idea of a movement tends to its realisation, and (2) by the limitation of this through inherited instincts or tendencies; only when the movement idea falls in with one of these does it tend to action: the young lion does not seek to imitate the bird flying, nor the fish swimming. Even in this modified form, however, the theory does not help us over the crucial difficulty of imitation-psychology,—how the perception of an action in animal *B* should become the idea of a corresponding action in the mind of animal *A*: it is only this latter idea that tends to be realised in the actual movement of *A*. An older child's imitation of its elders is *conscious*, their actions are interpreted as means to a desired, if vague, end, and are imitated accordingly. In the imitations of very young children and lower animals this is not the case. When a chick pecks imitatively, either at the sight or the sound of the mother-hen pecking, there is no translation of the sound- or sight-image of external movement into idea of the chick's own action. The tendency to look for imitation everywhere is somewhat overdone; rather the actions by the lower animals are never imitative, except to the outside observer: the appearance of imitation is due to the fact that the attention of the young animal is from birth onwards centred in the mother or in both parents, that almost all young animals have the following instinct more or less developed, and that animals, like men, follow in their actions and in their mental life the line of least resistance. A sheep jumps when another has jumped, not because it imitates, but because its attention is drawn upwards by its leaping fellow: the chick pecks at the sound of tapping, because its attention is drawn to the ground, where the sight of the grain calls out the pecking-reflex. Imitation is not an instinct because it is never unconscious: and Thorndike's experiments showed that conscious imitation is very difficult to find in animals. His subjects did not imitate the actions of their neighbour dogs or cats, because they could not attend to them.

Naturally, in the Play of Man, the *rôle* of Suggestion is much greater than in that of Animals, and Prof. Groos opens many interesting questions as to its action: in social plays—the school of citizenship,—in musical and dancing-plays, the origin of the higher arts, the player is thrown into a state of high suggestivity, resembling the ecstasy, or the hypnotic trance. In the one case it is the personal influence of the leader, or the mere fact of belonging to a crowd or group: in the other it is the hypnotic effect of rhythm, of monotonous movement. The result is to

give a strong sense of reality in the game,—play though it be. The more real the game for the time being, the greater its enjoyment, and the greater its educative effect.

I have only touched on one or two of the innumerable points of interest the work raises, and where I have criticised, it has been to suggest problems rather than to depreciate in any way a most valuable contribution to Psychology. One has to regret that in spite of the author's collaboration, its translation leaves much to be desired, and hardly does justice to the German original. Sentences to which no meaning can be attached read quite clear in the latter; as, for example, page 232, "Sully and Ribot attempt to unite them," etc.—and p. 295 in the German edition: page 234, "In all those relations," etc.; page 344, "When the display of one's excellencies," etc. (in the German, p. 444, *wenn* is an 'if,' not a '*when*'). On page 233 "*zur Voraussetzung*" is apparently translated 'to the occasion'; page 234, *ausser-ästhetisch* is 'external' ("an external sense of triumph," *cf.* German p. 298); page 240, *Schuss von der Kanzel*—'Shots from the Chancel,' and *Gemse*—'goat'; page 288 (German, p. 370), *völlig verschiedene Reactionen, i.e.*, a number of quite diverse reactions, becomes "quite an involved reaction"—a very different matter; on page 289 (German, p. 370) a meaningless "and sensation as well" is found to be *Die Freude am Auchkönnen;* page 381, a distorted translation is rendered quite unintelligible by the printer's omission of a line; page 362 (German, p. 468) *übermässige Bereitwilligkeit* is "inherited readiness . . .". The proof-reading, especially of the German quotations, should be more carefully done for the second edition; there are three errors on page 36 for example.

J. L. McINTYRE

VI.—NEW BOOKS.

Fact and Fable in Psychology. By JOSEPH JASTROW, Professor of Psychology in the University of Wisconsin. Boston and New York: Houghton, Mifflin & Co. 1900.

PROF. JASTROW has republished a number of essays more or less popular in tone and scope, and originally contributed between the years 1888 and 1900 to such organs as *The Popular Science Monthly, Harper's Monthly, Scribner's Magazine, The Cosmopolitan, The Ægis, The New Princeton Review.* The subjects discussed in the volume include the following topics: "The Modern Occult; The Problems of Psychical Research," "The Logic of Mental Telegraphy," "The Psychology of Deception," "The Psychology of Spiritualism," "Hypnotism and its Antecedents," "The Natural History of Analogy," "The Mind's Eye," "Mental Prepossession and Inertia," "A Study of Involuntary Movements," "The Dreams of the Blind". "The present collection of essays," he tells us in the preface, "is offered as a contribution towards the realisation of a sounder interest in and a more intimate appreciation of certain problems upon which psychology has an authoritative charge to make to the public jury." It aims to show that "the sound and profitable interest in mental life is in the usual and normal, and that the resolute pursuit of this interest necessarily results in bringing the apparently irregular phenomena of the mental world within the field of illumination of the more familiar and the law-abiding". Since what Prof. Jastrow means by "the realisation of a sounder interest" is mainly to be gathered from the second and third essays in the book (the remaining essays are to be considered as exemplifications of his principle), we will devote most of our space to an examination of his criticism of what is termed "psychical research". The doctrine, when clearly stated, is not one which is ever likely to be put in question. There is no doubt that it is more profitable to study certain phenomena than to study others; and again, it is obvious that the little-known should be, whenever possible, interpreted on the analogy of the better-known. The only difference of opinion which exists between Prof. Jastrow and some other psychologists consists in a difference of opinion as to the limits of applicability of an unavoidable canon. We wish it to be clearly understood that we do not argue on the assumption that any particular interpretation of still disputed facts is the correct one; but that we merely confine ourselves to a discussion of method. From this point of view the motives which impel investigators to study thought transference, or mediumship, do not concern us in the least. The fact that a man set out upon an inquiry with the hope of proving a given thesis might possibly vitiate the results, but would not in the least prove that the principle of the inquiry was logically wrong. Prof. Jastrow is at great pains to discover the relations between the methods

of the 'psychical researcher' and those of the 'true psychologist,' and he finds that although both travel for a considerable distance along the same road, they part company when the former, *e.g.*, in a Census of Hallucinations, lays stress upon those hallucinations which are "veridical". The position could only be defended on the assumption that the only proper point of view for psychology is one of extreme subjectivism, according to which the only objects to be considered are the psychological states of a given subject, and for which the problem as to the connexion between these objects and other objects which are not merely states of the given subject, is irrelevant or futile. On such a view, the consideration of 'veridical hallucinations' would be as unpsychological as that of the connexion between *my* sun and yours. Prof. Jastrow, however, does not seem to hold this view of the nature of psychology. If he did he could never speak of the interest which psychologists find in "other natural products of *psycho-physiological* action". And from this point of view it is hopelessly false to say that an hallucination is equally interesting to psychology whether it happens or not to be 'veridical' (in the sense in which Prof. Sidgwick's committee used the word). Once forsake the subjectivistic point of view, and the connexion between A's state *m* and B's state (identical or analogous in objective reference) *m'* is quite as significant whether A and B are both looking at the Sun, or B is experiencing the hallucination of A's wraith. In both cases we may set about to solve the problem as to the connexion; in so far as it has a meaning in the one case, it has a meaning in the other. Prof. Jastrow or any one else is indeed at liberty to reject the conclusions of the Census of Hallucinations, if he can show any valid reasons. But Prof. Jastrow has entirely failed to demonstrate that the inquiry was not a psychological one, in the sense in which he appears to use that term. It is amazing enough that in his anxious haste to set the public right at all costs, he should have repeated a number of old and exploded errors. Thus he might have spared us the trouble of reading once more the statement that the experiments of Hansen and Lehmann on involuntary whispering afford a scientific disproof of the conclusions based upon Prof. and Mrs. Sidgwick's experiments on thought-transference. It is long since Prof. Sidgwick conclusively disproved this alleged disproof, and long too since one of those very experimenters—Lehmann himself—admitted the correctness of Sidgwick's contentions.

In the same way it was a pure and simple *ignoratio elenchi* to repeat Parish's criticisms on the Census of Hallucinations, while leaving undiscussed Mrs. Sidgwick's refutation of them. He insists at some length upon the difficulties of such an investigation as that contained in the Census, enumerating a number of sources of error, and there is not one mentioned in the whole discussion but has been anticipated with admirable subtlety of analysis and some attempt at numerical estimation by Prof. Sidgwick and his collaborators.

The remaining essays in the book may be commended as well-informed popular expositions, and even in one case, as a real contribution to knowledge. The essay on "Dreams of the Blind" (an investigation, by the way, belonging to the province of abnormal psychology) will prove most valuable to the student of the types and development of mental imagery. "The mode in which a brain-centre will function depends largely upon its initial education, but, once this education completed (the critical period being from the fifth to the seventh year), the centre can maintain its function, though deprived of sense-stimulation."

Finally the "Study of involuntary movements," while it has the merit

of having been the first of a series of other similar studies by different investigators, calls for severe criticism on a number of points. The apparatus used is well-nigh hopelessly inaccurate; it entirely fails to record movements describing certain curves; it cannot register the variations of pressure of the fingers upon the plate; most important of all, it is impossible while using it to make any time-measurements of the least value. The author prints only a few typical results. We are not told how many subjects were operated with, from which subject each particular tracing was obtained, to what extent the procedure was "wissentlich" or "unwissentlich," what the individual differences of the subjects were. The question deserves to be reinvestigated with the help of some such apparatus as that described by Sommer in his *Psycho-pathologische Untersuchungsmethoden.*

F. N. H.

The Revival of Phrenology: The Mental Functions of the Brain. By Bernard Hollander, M.D. London, 1901.

We are told in the preface to this book that it "aims at clearing up the mystery of the fundamental psychical functions and their localisation in the brain. It is the first work on the subject since the dawn of modern scientific research." This quotation is but a sample of the many passages which show that Dr. Hollander entertains very exalted, and, in view of the contents of the volume it must be said, absurdly inflated notions of the aims and achievements of his book. The volume is presented as the result of fifteen years of work at the subject and yet it is not so much a book as a bundle of rough notes from which a book of some sort might have been constructed. It consists of a judicious mixture of extracts from medical journals of the kind which, like the reports of the police-courts, are always interesting reading; of copious quotations of the opinions of well-known personages from Queen Victoria downwards; of jibes thrown at those who by honest toil have proved certain cases of localisations of cerebral function, because in one or two cases some flighty phrenologist nearly a century ago made a wild and lucky guess at the truth (*e.g.* the case of the visual cortex, p. 303); last, but by no means least, pictures such as the opposed portraits of Cardinal Manning and a sensual pope, calculated to bring immediate conviction to all minds, save those protected by prejudice or a critical faculty. Throughout the book two doctrines, which should be rigidly distinguished, are hopelessly confused together, namely the doctrine of the localisation of cerebral functions on the one hand and on the other hand the doctrine which, assuming the truth of the former, asserts the possibility of detecting the relative degree of development of the functional areas of the brain by inspection of the external surface of the cranium. In the case of two 'faculties' Dr. Hollander brings forward a considerable mass of what he believes to be evidence of their localisation in the brain. He attempts to prove the localisation of 'fear' in the angular and supramarginal convolutions and the 'emotion of irascibility' in the middle part of the temporo-sphenoidal lobe. As evidence for the former localisation he has collected, and in part quotes, the reports of some 150 cases in which fear, melancholia or depression of spirits occurred in conjunction with evidence, direct or indirect, of injury to or of some abnormal state of the parietal lobe or the tissues in its neighbourhood. For he argues that melancholia is the expression or result of fear. If this assumption were granted, it would still be necessary to deny that the collection of cases affords any evidence in support of the localisation aimed at, and for the

following reasons. The only criterion for the inclusion of any case in the list is that there should be mentioned melancholy or fear and some evidence, direct or indirect of change in the parietal lobe; and in a very large proportion, in fact the very great majority of cases the area of the supramarginal and angular gyri which form about the postero-inferior third only of the lobe is not mentioned, while in very many cases the change is mentioned as affecting, not this, but some other part of the parietal area and often some other part of the cortex also. Now these 150 cases are collected from all times and countries, going back at least as far as the year 1825. During that period of time the number of reported cases of brain injury and disease must be enormous, and it is certain that by adopting the author's method and picking out all cases that might seem to support one's view, however remotely, it would be possible to make out a similar case for the localisation of any namable mental function in any part of the brain. It is a simple logical truth that the enumeration of cases of this sort, even if the selection of them were carried out much more rigidly than has been done by the author, cannot afford proof of localisation of function in this or that part. To obtain evidence of this sort by the collection of cases it is necessary first to collect a considerable number of cases of morbid change of some part of the brain regardless of the nature of the accompanying symptoms, and then to exhibit the proportion of the cases in which the faculty or form of mental process in question seems and does not seem affected in the way demanded by the suggested localisation. And further, it would be necessary to compare then this group of cases with a similar group of cases of similar lesions affecting some other part of the brain, for there may always be symptoms common to certain kinds of lesion whatever part of the brain they affect, *e.g.*, the general pressure symptoms caused by tumours. And in doing this it would be necessary to distinguish as far as possible those cases, such as inflammation, in which the lesion might be expected to produce exaggeration of function, from those, such as atrophy, which should exhibit loss of function. This last precaution is entirely neglected by the author, and the lack of this precaution, while it vitiates in some degree all his collection of evidence, appears most ludicrously in the series of cases quoted by him to prove localisation of the *libido sexualis* in the lateral lobes of the cerebellum. We find in his list cases of inflammation, of hypertrophy, of complete softening and of complete atrophy all alike associated with grossly increased sexual irritability; so that if we assume the cases to be correctly reported and quoted they, so far from favouring the author's suggested localisation, suffice absolutely to disprove it. The 'proof' of the localisation of the 'emotion of irascibility' is similar in character to the above described. There is nothing inherently absurd in Dr. Hollander's attempts at localisation. It is his illogical treatment of the material and the crudity of his psychological analysis that render his book of little value.

W. McD.

Studies in Social and Political Ethics. By DAVID G. RITCHIE, M.A., LL.D., Professor of Logic and Metaphysics in the University of St. Andrews. Sonnenschein. Pp. ix., 238. Price 4s. 6d.

To quote the author's own *caveat*, "the papers here collected together were written at considerable intervals of time and adapted to different hearers or readers; and the same subject is often approached from various starting points. What is said in one paper must be taken as

qualifying or supplementing what is said in another. Any one trained in philosophical studies who may look into this volume may, perhaps, have to be reminded that these essays and addresses, from the circumstances of their origin or first publication, are 'exoteric discourses'. It seems to me possible and profitable to discuss practical questions of political and social ethics on the basis of what may be called evolutionary utilitarianism, without raising, or at least without discussing, metaphysical questions, provided that one may take for granted that faith in the value and meaning of human society and human history which is implied in all serious political and social effort."

The point of view here indicated is made most explicit in the lecture on "The Ultimate Value of Social Effort"—an admirable example of the ethical temper and method of "humanism". Prof. Ritchie is never so instructive as when he is examining the crude and dogmatic application of biological formulæ to social problems—as for instance in the paper on "Social Evolution". The essay which is, however, most topical in interest is that on "War and Peace". It is rather too vague to be illuminating, and it can hardly be said to avoid altogether the errors of "abstract thinking" against which it is mainly directed. The "absorption" of smaller states by larger may be approved, it is suggested, in the name of "the higher civilisation," and upon the ground that "there is everywhere an inevitable conflict between inconsistent types of civilisation". But what about the effect of this process of "absorption" upon the "higher type" itself, to say nothing of the sinister possibilities of political jesuitism such a point of view "inevitably" suggests? It would appear that Prof. Ritchie's treatment of the issue is not altogether "detached"; it is certainly one-sided. If it does justice to certain elements of the question, it neglects others —of at least equal importance. The remaining essays do not call for special remark: it goes without saying that they are brightly and pleasantly written, that they are full of point and instruction, and that they are pervaded throughout by a sober and reasonable "faith in humanity". The concluding essay on "Free Will and Responsibility" is perhaps of more directly philosophical interest than the rest, and is a good example of Prof. Ritchie's gift for popularising philosophical ideas.

SIDNEY BALL.

The Human Nature Club: an Introduction to the Study of Mental Life. By E. THORNDIKE. New York: Longmans, Green & Co., 1901. Pp. vii., 235. Price $1.25.

The book records the conversations, arguments and discoveries of a little group of intimates who, tired of the "Browning class, the Greek Art class and the Church History class," and stirred up by a popular lecture, resolve to study the "real world of people". The discussions turn upon the influence of past experience, memory, attention, habit and character, mental training, heredity, etc.; and the Club, by singular good fortune, invariably reach the conclusions which are laid down in James's *Psychology*.

It is easy to find fault with the book. The dialogue, as the author owns with somewhat exasperating frankness, is "thoroughly fictitious," in all senses of the word. It has to be helped out by summaries and interpolations in the author's own name. The Club arrive at sane conclusions by the easiest and broadest of paths; and this is not exactly the truth about psychology in general. The constant appeal to James blunts the edge of the writer's pedagogical skill. Nevertheless, in the

hands of the readers for whom it is intended, the work will probably do good, and can hardly do harm. "If the book tells a little truth, and does not deceive readers into thinking that it tells more than a little," says the author, "it may serve a good purpose in waking people up to the possibility of a scientific study of human nature, and introducing them to some of the published results of such study". This is true, and makes it worth while to have brought the Club into existence.

Selections from Plato: with Introduction and Notes. By L. L. FORMAN, London: Macmillan & Co., 1900. Pp. lx., 510.

"The aim of the book. . . . is to offer an introduction, first, to Plato's language, with the constant aid of grammar and dictionary, second, to the noble figure of Socrates as presented in Plato's pages." The Introduction deals with the life of Socrates. The Selections fall into four groups: (1) Concerning Socrates—*Apology, Crito*, parts of *Symposium, Phædo, Laches, Theætetus* and *Republic;* (2) Socrates and the Sophists —parts of *Protagoras, Gorgias, Euthydemus, Theætetus, Menon;* (3) Plato and Socrates—selections from the first three and last six books of the *Republic;* and (4) Briefer Extracts from *Phædrus, Menexenus, Alcibiades, Protagoras, Republic, Sophistes, Phædo, Timæus, Theætetus, Laws.*

The work achieves its purpose very satisfactorily. The notes are well arranged, clear, and of the right intellectual level. The introduction is admirable in matter and charming in form.

Lectures on the Ethics of T. H. Green, Mr. Herbert Spencer and J. Martineau. By HENRY SIDGWICK, late Knightbridge Professor of Moral Philosophy in the University of Cambridge. Macmillan & Co.

Advance Notice.

This forthcoming volume consists of eight lectures on Prof. Green's *Prolegomena to Ethics*, ten on Mr. Herbert Spencer's *Principles of Ethics*, and four on Dr. Martineau's *Idiopsychological Ethics*. They were not prepared for publication by Prof. Sidgwick, but are from his lecture notes, and substantially as he delivered them. They are a valuable supplement to his hitherto published ethical works, containing a detailed examination of the ethical views of the most prominent exponents of so-called Transcendental (or Idealist) and Evolutional Ethics, which Prof. Sidgwick regarded as the principal rivals of ethical Utilitarianism in contemporary English thought. And Dr. Martineau is perhaps the only 'Intuitional' moralist whose writings have been influential in England in this generation.

The American Journal of Sociology, vol. vi. Chicago: The University of Chicago Press, 1901.

The American Journal of Sociology has now reached its sixth volume and continues to produce articles of considerable value on social phenomena more or less peculiar to the United States. In addition to these articles it contains useful contributions from European and American sociologists on the scope and methods of sociology and its relation to the other sciences. A considerable amount of space is devoted to reviews of books, and it issues from time to time a useful bibliography of sociological literature.

W. D. MORRISON.

Des Principes Sociologiques de la Criminologie. Par RAOUL DE LA GRASSERIE. Paris: Giard et Brière, 1901. Pp. 442.

This work forms the twenty-sixth volume of the International Sociological Library, published under the editorship of M. René Worms. M. de la Grasserie accepts the principles of the Italian school of criminologists. That is to say, he believes that crime is a product either of hereditary disposition or of social circumstances, and that the proper way to deal with it is not by vindictive punishment but by removing or ameliorating the conditions out of which it springs. In so far as these points are concerned M. de la Grasserie frankly tells us that he has nothing new to say. In his opinion all that can be said about them has been said already. What he wishes to do in the present volume is to fill up some gaps, and to complete the body of doctrine which has been formulated in its essential lines by his predecessors. There are one or two important directions in which it requires completion or at least more detailed and exhaustive treatment. Criminal sociologists have been, in M. de la Grasserie's opinion, too exclusively occupied in answering the question, What are the best means of protecting society against the criminal? Is this object to be attained by elimination or by reformation, or by a combination of both methods, according to the circumstances of the case? Or are the methods of elimination and reformation of comparatively little value as compared with the effort to remove or mitigate the adverse social and individual conditions in society as a whole which tend to the production of crime? No doubt these are and must remain the most important questions in criminal sociology. But there are subsidiary issues of considerable weight, and M. de la Grasserie considers that some of them have been too much neglected. Take, for example, the question of punishment. Modern writers on crime of the sociological school contend that all punishment should, as the Germans say, be a *Zweckstrafe*—punishment for a social purpose and not *Vergeltungsstrafe*, or mere retaliatory punishment. The supreme end of punishment is social utility and not the satisfaction of revenge. M. de la Grasserie does not dissent from this proposition, but he points out that crime has an individual as well as a social aspect. Crimes as a rule are committed on individuals, and the individual who suffers at the hands of the criminal has a right to be considered as well as the society of which he is a member. If the individual is not legitimately considered in the treatment of criminals by the penal law there is a danger that he will take the law into his own hands, and that vendetta and lynch law will at times take the place of the law of the land. In order to obviate this danger a certain amount of satisfaction must be given to the victim of a criminal offence. This need not necessarily be satisfaction in the shape of pounds, shillings and pence. It may be only what M. de la Grasserie calls psychological satisfaction. He believes that the victim as well as society has certain claims upon the criminal, and he considers that these claims must to some extent be satisfied if penal law is to be entirely in harmony with the public conscience. In chapter v. M. de la Grasserie suggests certain methods of satisfying the victim. Some of them are plausible, but the great difficulty would be in putting them into practical operation. To this objection M. de la Grasserie would reply that it is his immediate purpose to assert and establish principles and to leave difficulties of practice to be overcome by specialists. Passing away from the subject of reparation to the injured there are other directions in which M. de la Grasserie considers that the teaching of criminologists ought to be

supplemented. He considers that more attention should be paid to the evolution of penal law and penal institutions, and he is of opinion that comparative legislation is of great value in showing us the geographical distribution of criminological ideas and practices. On all these matters M. de la Grasserie writes with much lucidity and judgment. His book, if not exactly profound or original, is illuminating, and deserves a place on the bookshelf of all those who are interested in this department of social study.

Le Crime et le Suicide Passionnels. Par LOUIS PROAL. Paris: 1900. Félix Alcan. Pp. 683.

M. Proal is a French judge and is already favourably known to the public by his excellent books on Political Crime and Crime and Punishment. The object of the present volume is not to present a collection of crimes of passion in the form of a book. Its object is criminal psychology. M. Proal wishes to show us the temperament, the character, the mental calibre and characteristics of the man or woman who commits crime under the spell of passion. The passion with which M. Proal principally deals is the passion of love. As he very truly points out poets and novelists as a rule deal with the exquisite, the sentimental, the ideal side of love. But it has another side as well. It sometimes leads its victim to vengeance, to suicide, to crime. It has been a part of M. Proal's duty as procurator of the Republic and *juge d'instruction* to examine and interrogate persons charged with crimes of passion, to study their character, to go into the causes of their offences, to read the letters of suicides and the documents which criminals of passion draw up in their defence. His book is the work of a man who has studied his human documents at first hand, and it has all the interest and reality attaching to such a work. Love plays a great part in literature and life. It also plays a considerable part in the statistics of suicide and crime. While poets dwell on its charm and beauty, magistrates are compelled to consider its miseries, its despairs, its crimes. Here are some of the questions discussed by M. Proal, and as a rule discussed with great judgment, discrimination and psychological tact. Why is it that unrequited love sometimes makes a person so miserable that he puts an end to his life? Why is it that lovers who could easily live happily together prefer to die together? Why is it that lovers at times pass so rapidly from love to hate? Why is it that a sentiment so tender in itself should often become so cruel? Why does the jealous lover drive a knife into the heart which he adores? Why does this passion, so fitted to make heroes, so often make cowards and assassins? It is these and similar questions which M. Proal attempts to answer. In the course of his inquiry he covers a very wide field, and exhibits a comprehensive and intimate acquaintance with the literature of love in ancient and modern times. His estimate of the psychological value of much of this literature is generally sound and illuminating. It is M. Proal's experience that the literature of passion has a good deal to do with crimes of passion. A vast amount of this literature is pessimistic, neurotic, sensualistic and fatalist. Literature imitates crimes of passion, and crimes of passion are a reproduction of what is found in literature. It is M. Proal's opinion that the characters depicted and developed by great poets, dramatists and novelists are psychologically true to life. The cries of love, of anger, of vengeance uttered by the heroes and heroines of Corneille and Racine are not fictitious creations. They are the real

utterances of nature. "They are so true," says M. Proal, "that I have often heard them in the mouth of persons charged with crimes of passion." These facts have led him to draw several interesting comparisons between the criminals of fiction and the criminals of real life. He arrives at the conclusion as a result of such comparisons that the principle and distinguishing quality of genius is psychological truth. The volume is well worth reading as a study in morbid psychology.

Annales de l'institut International de Sociologie. Publiées sous la Direction de René Worms, Secrétaire-Général. Tome vi. Paris: Giard et Brière, 1900. Pp. 320.

This volume contains ten essays on sociological questions written by members and associates of the International Institute of Sociology. The first essay is by the eminent economist Prof. A. Loria. It is an interesting and instructive study of the relation between sociology and philology. M. Maxime Kovalewsky contributes a paper on the relations between Sociology and comparative law. Prof. Ferdinand Toennies in his essay deals with the fundamental conceptions of pure Sociology, and M. René Worms attempts to show how sociology regards the vexed question of the relations between the individual and the community. A paper of a different type is Baron Garofalo's on the Individualism of Nietzsche, while Dr. Groppali's subject is a review and criticism of contemporary American Sociology. M. Raoul de la Grasserie devotes a long article to the history of theocracy and the various forms which it has assumed. His practical conclusion is that the movement of modern thought is towards a separation of the civil and spiritual powers. Herr Jaffe's paper is of an economic character, dealing with the part played by the various forms of distributive agencies in the present economic system. The other papers are by M. Tenichef on Education, and by Dr. Puglia on Human Evolution. In addition to these papers, which vary considerably in merit, M. René Worms contributes an introduction in which he deals with the work of the Institute of Sociology during the year.

La Foule Criminelle. Essai de Psychologie Collective. Par Scipio Sighele. Deuxième édition. Paris: Félix Alcan, 1901. Pp. 300.

This is a new volume of Alcan's "Bibliothèque de Philosophie Contemporaine". It is a translation from the Italian of M. Sighele's well-known work on the criminal crowd. The second edition is in great part a new book. The author has availed himself in reproducing it of all the fresh material on collective psychology which has appeared in recent years. The first edition was almost entirely confined to an examination of the conditions which lead crowds to commit crimes. In the present edition M. Sighele goes outside this subject and deals with other manifestations of masses of men. In an interesting chapter on public opinion, M. Sighele discusses the difference between the crowd and the public. He comes to the conclusion that the crowd is a barbarous and atavistic collectivity, whilst the public is a modern and progressive collectivity. The form of the volume is not altogether satisfactory. It is made up partly of essays and partly of lectures, and there is not much organic connexion between its component parts. But in spite of this drawback M. Sighele's book contains many interesting and acute remarks on collective psychology.

Einleitung in die Philosophie. Von WILHELM WUNDT. Leipzig: Verlag von Wilhelm Engelmann. 1901. Pp. xviii., 466.

In this book the indefatigable author, who has already dealt exhaustively with almost every aspect of philosophic study, adds another to the somewhat numerous Introductions to Philosophy that have appeared in recent years. Books of this kind can hardly yet be described as superfluous, if indeed they will ever become so. Happily most of those that have hitherto appeared are sufficiently distinguished from one another by their general aim and character to preserve a freshness and individuality of their own among the many that are brought out; and Wundt's will probably not be the least interesting. Its chief characteristic, in comparison with others, is its intimate combination of careful historical study with the strenuous attempt to arrive at an analytical survey of the fundamental problems—a combination which is on the whole a happy one, though there may be some doubt as to the success with which it has been carried out in detail.

The book is divided into three parts: I. The Scope and Divisions of Philosophy; II. The Historical Development of Philosophy; III. The Leading Points of View in Philosophy.

In the first part Wundt begins by discussing the various definitions of Philosophy that have been proposed; and is led on, by the consideration of these, to notice the general relations of philosophy to the particular sciences and to religion. The general conclusion at which he arrives is that philosophy is to be regarded as the universal science, in contradistinction from the particular sciences—the science that seeks to combine the elements of knowledge contained in these special sciences into a single self-consistent whole, and to discover the fundamental principle involved in the methods and presuppositions upon which these special sciences proceed. He opposes this scientific conception of philosophy to the more practical view of it that is sometimes taken, as being normative in its character, and as having the doctrine of values as its essential problem. According to the latter view Philosophy would consist substantially of the three departments of Logic, Ethics, and Æsthetics, and would deal simply with the standards of value which these set up. It would thus be sharply marked off from the various positive sciences. But against this view it is contended by Wundt that any such standards of value must rest on certain ultimate grounds in the nature of things; and that the consideration of these ultimate grounds must be a more fundamental problem than the treatment of the standards themselves. The consideration of such grounds, moreover, would seem to be inseparable from the general problems of the nature of knowledge and reality. It seems best, therefore, to regard philosophy as being concerned with the fundamental presuppositions of Logic, Ethics, and Æsthetics, just as with those that underlie the special positive sciences.

These reflexions lead Wundt on to the consideration of the classification of the sciences; and after some discussion of the schemes suggested by Plato, Aristotle, Bacon, D'Alembert, Bentham, Ampère, Hegel, Comte, Spencer, and J. S. Mill, he proposes the following arrangement:—

1. Formal Sciences—consisting, it would appear, of the various branches of Pure Mathematics alone;

2. Real (or Material) Sciences—falling into the two groups, Sciences of Nature and Sciences of Mind or Spirit.

The Natural Sciences are then grouped as follows:—

(*a*) Phenomenological (Physics, Chemistry, Physiology);

(*b*) Genetic (Cosmology, Geology, Biology—in the sense of the study of organic evolution);
(*c*) Systematic (Mineralogy, Botany, Zoology, etc.).
The Sciences of Mind or Spirit fall into similar groups:—
(*a*) Phenomenological (Psychology);
(*b*) Genetic (History);
(*c*) Systematic (Law, Political Economy, etc.).
Philosophy itself is then divided up in a somewhat similar way as follows:—
(*a*) Genetic—the doctrine of Knowledge, which is subdivided into—
(*α*) Formal (Logic);
(*β*) Material (Epistemology).
Methodology seems to be regarded as the link that connects these two.
(*b*) Systematic—the doctrine of Principles, which is subdivided into
(*α*) General—Metaphysics;
(*β*) Special, falling into the further subdivisions—
(1) Philosophy of Nature (Cosmology, Biology, Anthropology);
(2) Philosophy of Spirit (Ethics—with Philosophy of Law, Æsthetics, Philosophy of Religion).

The Philosophy of History seems to be treated as a link connecting the Philosophy of Nature with the Philosophy of Spirit; while the History of Philosophy stands apart by itself.

Attempts to get a general survey of the field of human knowledge, when made by a writer who has a comprehensive grasp of many of its departments, can never be without a certain interest; but the arrangement here given seems rather too scholastic, and the present reviewer cannot pretend that he finds it very enlightening.

The second part of the book contains a sketch of the History of Philosophy from Thales to the present time. It need hardly be said that it is a good sketch, showing competent knowledge of the material. The only doubt is whether, for a work of this character, all the details here given are desirable. A discussion of the general tendencies of thought, with references to the recognised Histories of Philosophy for further particulars, might have been more helpful to the student.

The most interesting passage in this section of the work will probably be found in the general summing up with regard to recent history. Wundt holds that the two most remarkable developments of thought in the century that has just passed are to be found in Hegel's Philosophy of Spirit and in Positivism. "It is Hegel's merit to have for the first time set the sciences of mind or spirit over against the natural sciences as equally worthy of study. What chiefly prevented him from achieving his aim was his delusive notion of trying to bring the development of spirit, and indeed the development of things in general, into a definite dialectical scheme. Besides this, he was deficient in the right understanding of the natural sciences, and, partly as a consequence of this, had neither Psychology nor Epistemology. The lack of the former prevented him from having a true insight into the motives by which the activities of the mind are determined: the lack of the latter deprived him of the necessary critical power in dealing with his own constructions. But just as Hegel gave a one-sided attention to the sciences of spirit, so Positivism gave a one-sided attention to the natural sciences. In this way it sets out with a complete lack of appreciation of the content of the sciences that deal with human affairs, and even tries in its efforts after the construction of a 'Sociology,' to bring them within the domain of natural science. And thus Positivism also fails to arrive either at

a useful Psychology or at a tenable Epistemology. Psychology comes to be regarded either as a part of Physiology or as a mechanical theory of Association. Epistemology is either entirely lacking, or rests on a resuscitation of the old dogmatic empiricism. The inevitable result is that positivism sinks into a kind of dogmatism which rests on arbitrary presuppositions and which, equally with the Hegelian dialectic, substitutes a dead external schema for the living relations of things. The problem of scientific philosophy at the present time is to correct the deficiencies of these two most significant of modern points of view, by strenuous attention to the principles and demands of scientific thinking."

In the remaining part of the book Wundt seeks to give an account of the various points of view that have been taken up in the study of philosophy. These he arranges under the three headings—I. Epistemological Points of View; II. Metaphysical Points of View; III. Ethical Points of View. The Points of View dealt with under the first of these headings are Empiricism, Rationalism, and Criticism. Empiricism is subdivided into Naïve Empiricism (found chiefly in ancient speculation), Reflective Empiricism (such as that of Locke) and Pure Empiricism (developing from Berkeley, Condillac and Hume to such recent writers as Avenarius). Rationalism is subdivided into Apriorism (the Eleatics, Plato and Aristotle, etc.), Ontologism (the Cartesians), and Panlogism (Hegel). Criticism is subdivided into Negative Criticism or Scepticism and Positive Criticism or Criticism Proper. The Metaphysical Points of View are classed as Materialism, Idealism and Realism. Materialism may be Dualistic or Monistic. Idealism may be Objective (as with Plato and Leibniz), Subjective (as with Berkeley), or Transcendental (as with Fichte, Schelling, and Hegel). Realism may be Dualistic (as with Aristotle and Descartes) or Monistic (as with Herbart and Schopenhauer). Ethical Points of View, which are more slightly dealt with than the others, are classed as Heteronomous, Transcendent, and Immanent. In all this, as in the classification of the sciences, though there is much that is instructive and valuable in Wundt's treatment, he seems somewhat to confuse the issues by too great elaborateness of subdivision, and indeed to commit in a different way the same fault that he charges against Hegel and the Positivists—that of crushing out the life of speculative efforts in the attempt to force them into a scholastic schema.

On the whole I am afraid that most readers will close the book, in spite of its solidity of thought and wealth of material, with a feeling of disappointment. But no intelligent reader will close it without having learned a great deal from it.

J. S. MACKENZIE.

Allgemeine Aesthetik. Von Dr. PHIL. JONAS COHN, Privat docenten an der Univ. Freiburg, i. B. Leipzig: Verlag von Wilhelm Engelmann, 1901.

The aim of the author is to give a general outline of æsthetic considered as a critical science, and thereby to emphasise the unity of all æsthetic experience, a fact too often neglected by writers on the subject. In the first two parts of the book, the especial characteristics of æsthetic experience, formal and material, are discussed: in the third, the relation of the sphere of beauty to the spheres of knowledge and of ethics respectively.

To proceed scientifically, Dr. Cohn starts from the æsthetic judgment, as a material lying ready to hand, whose existence is universally recog-

nised, and proceeds to investigate the particular kind of value which it predicates. To the distinctive characters of this value (Wert) he attaches a scientific terminology. The subject of the judgment itself is defined as "an Anschauung"—an intuitive apprehension. The characteristic qualities of its value are, first, that it is "intensiv," and secondly, that it possesses "Forderungscharakter". By the word "intensiv" as a quality of this value, Dr. Cohn denotes the fact that an æsthetic experience is an end enjoyed and estimated for its own sake: whereas, in regarding an object from a moral or intellectual point of view, the value we attach to it is 'consecutiv,' that is, depends on its relations to the wider whole of duty or knowledge. By its "Forderungscharakter" the æsthetic is distinguished from the merely pleasurable experience: in the first case we are conscious of an obligation to approve, which is not present in the second.

In the second part of his book Dr. Cohn discusses the concrete nature of æsthetic value. This may be summed up in the single phrase "the expression of an inward life"—an expression, however, which fulfils the formal conditions already laid down as characterising all æsthetic experience. In connexion with this conception, Dr. Cohn deals at great length with that most baffling of problems, the relation of form and content. He dismisses the theory by which the content, as something purely intellectual, is distinguished from the form as the sensible medium which conveys it. The artistic content is always 'anschaulich'—directly, not mediately apprehended in the form: apart from the form it has no existence of its own. For all form is at the same time expression: any change in the treatment of the subject changes the subject itself.

The necessary interdependence of form and content being granted, it is evident that the principles of formation, or construction, will at the same time act as principles of expression. By principles of formation are to be understood the formal laws of artistic representation, whose end is to simplify the æsthetic apprehension of the particular content. They demand in all cases completeness, clearness, distinctness, and unity of treatment. On the fact, then, that these conditions of formation are at the same time conditions of expression, Dr. Cohn bases his division of the various kinds of beauty into two main classes—pure and mixed beauty. Pure beauty is found wherever the content is adequately expressed without violation of the principles of form. This can evidently only be the case where the content, the life expressed, is itself simple and harmonious. The attempt to represent a life whose harmony is disturbed by the presence of mighty forces, must involve a straining of the principles of form. We thus pass to the realm of mixed beauty, where the form is adequate by its inadequacy—it expresses by failing to express. Under this head fall the sublime and the tragic, each being only capable of expression by a violation of one or other of the formal laws of expression. In the case of the sublime and the tragic, a power whose magnitude we cannot wholly grasp is suggested by a want of completeness or unity in the external representation.

Herr Cohn's classification has the undeniable merit of being based on an essential æsthetic principle, and the application of it in detail is clear and careful. In the third part of the volume the general significance of æsthetic is considered, and its relation to the spheres of intellect and of morals. The essence of the artist's activity is defined as communication—his creative impulse, as the desire to communicate. The communication of the artist, however, is distinguished from moral and intellectual communication in being its own end. Dr. Cohn rightly lays stress on the fact that while the artist's work is thus a communication, of which

he is the author, yet the work of art is to be enjoyed and understood, not as an expression of his personality, but for its impersonal qualities: we are not to seek, but to forget the author in his work—a truth not always recognised in modern criticism.

In the closing chapters of the book Dr. Cohn views æsthetic in its relation to truth and to morality. His main conclusion, that each of these different provinces has its own principles, which are only valid for it, cannot be disputed. Still it will perhaps be felt that he detaches art and æsthetic experience generally, too sharply from the actual facts and demands of human life. Beauty is after all a matter of individual experience: and the æsthetic value of a work of art for any individual must vary with the degree in which it coincides with his own convictions and aspirations. For only so is that full sympathy with the object possible, which Dr. Cohn himself lays down as a condition of true æsthetic enjoyment. Especially is it true of the moral tendency of a work of art, that it cannot possibly be a matter of indifference, æsthetically speaking. It is true that the hero of a tragedy need not be good; or that, if he is bad, he need not necessarily come to a bad end: but the whole teaching of the work in question must be a witness to rightness and fitness of what is good, or it cannot approve itself even æsthetically to the ideal, or even to the average spectator.

Dr. Cohn's treatment of his subject is in all cases highly suggestive, and based on an intimate knowledge of past and present æsthetic theory. It may fairly be said that he has fulfilled the desire with which he set out, and written a book which is useful not only for the æsthetician, but for critic and artist, and indeed for all who wish to clear up their ideas on æsthetic problems.

J. Shawcross.

Geschichte der Philosophie im Islam. Von T. J. de Boer. Stuttgart, 1901.

The author gives a sketch of the history of Arabic culture (theology, philology, science, and literature are all included in the word 'Philosophie') within a compass of 200 pages. He is a special student of the subject, and wrote in 1894 an article in the *Archiv für Geschichte der Philosophie* on "The Contradictions of Philosophy According to Al. Gazzali, and Their Solution by Ibn. Rošd". But partly because his space is limited, and partly because he tries to include so much, his work is rather one of dogmatical statement of the creeds of various Arabic philosophers, than of exegetical analysis of their thought. The book is good for reference, but not for reading. It seems too much of a text-book on a subject which cannot in the nature of things be the matter of a text-book. Aristotelians will, however, welcome the concise section (pp. 90-137), entitled "Die Neuplat Aristoteliker des Ostens," and the chapter (pp. 165-177) on "Averroes". The historian of the middle ages would also do well to read the book, if he wishes to be saved from such mistakes as calling Averroes the "translator of Aristotle from the Greek". But the general reader will get a better idea of the trend of Arabic philosophy, and its influence, from Renan's *Averroès et l'Averroïsme.*

C. B.

Wille und Erkenntnis. Philosophische Essays. Von R. SCHELLWIEN. Hamburg: A. Janssen, 1899. Pp. 122.

An attempt to equal justice to the claims of will and thought to be the essence of the Conscience. The thing in itself must be either totally unthinkable or it must immediately know itself. Kant adopted the former alternative; the author adopts the latter. He holds that we immediately know ourselves at once as willing and knowing, as Erkenntniswille, which brings its own objects into being, and in so doing knows. Schopenhauer is criticised for maintaining that we immediately know ourselves only as willing and not also as cognitive beings.

Prolegomena a una Morale Distinta Dalla Metafisica. Da Dr. V. ERMINIO JUVALTA. Pavia, 1901. Pp. 82.

Substituting their English equivalents for the rather cumbrous technicalities of this author, we may say that Prof. Juvalta's object is to enforce the distinction between the moral standard and the moral motive, and to work out the consequences of this distinction. Before the dawn of ethical speculation the two notions are habitually confused, and the confusion long continues to haunt speculation. Right seems to define itself naturally as what we ought to do; and we ought to do it because it is right. In reality the standard is at first determined by the interest of the community, which in practice often means the interest of a single class. And as the feeling of moral obligation is called in to enforce the unwilling obedience of individuals whose wishes are not in accordance with the standard so determined obligation comes to be thought of as something intrinsically painful. Hence arises an antinomy the solution of which is sought in an appeal to metaphysics. But metaphysical assumptions merely give a false appearance of absolute value to that which by the nature of the case must be relative and temporary. And metaphysics can only be eliminated by establishing a truly universal standard of right, that is a rule of conduct which satisfies the conditions of stability for the whole community and the claims to happiness urged by each of its component members. In other words we must construct an ideal society. Prof. Juvalta accepts the method of Mr. Spencer with its distinction between Absolute and Relative Ethics, but censures his acceptance of individual liberty—which is merely the provisional postulate of modern industrialism—as the ideal standard of justice. The more detailed criticism of Mr. Spencer's ethics and the full presentation of the author's own theory are reserved for a forthcoming work.

A. W. B.

RECEIVED also:—

G. T. Ladd, *Philosophy of Conduct*, London, Longmans, 1902, pp. xxii., 663.

J. S. Mackenzie, *Outlines of Metaphysics*, London, Macmillan, 1902, pp. 172.

G. Shann, *The Criterion of Scientific Truth*, London, Cassell, 1902, pp. 51.

J. H. Muirhead, *Philosophy and Life*, London, Sonnenschein, 1902, pp. 274.

H. J. Brooks, *The Elements of Mind*, London, Longmans, 1902, pp. xviii., 312.

H. Sidgwick, *Philosophy, its Scope and Relations*, London, Macmillan, 1902, pp. xvii., 252.
J. M. Baldwin, *Fragments in Philosophy and Science*, New York, Scribner, 1902, pp. xii., 389.
H. C. Hiller, *Heresies*, vol. v., London, G. Richards, 1902, pp. xxiv., 599.
G. W. Leibniz, *Discourse on Metaphysics, Correspondence with Arnauld and Monadology*. Translated by G. R. Montgomery, Chicago, Open Court Publishing Co., 1902, pp. xxi., 272.
I. Kant, *Prolegomena to any future Metaphysics*. Edited by P. Carus, Chicago, Open Court Publishing Co., 1902, pp. v., 301.
X. Léon, *La Philosophie de Fichte*, Paris, Alcan, 1902, pp. xvii., 524.
G. Lechalas, *Etudes esthétiques*, Paris, Alcan, 1902, pp. 306.
P. Bonnier, *L'Audition*, Paris, O. Doin, 1901, pp. iii., 275.
E. Cuyer, *La Mimique*, Paris, O. Doin, 1902, pp. 366.
B. Bourdon, *La perception visuelle de l'espace*, Paris, Schleicher, 1902, pp. 442.
H. Rickert, *Die Grenzen der naturwissenschaftlichen Begriffsbildung*, zweite Hälfte, Tübingen, J. C. B. Mohr, 1902.
M. Palágyi, *Der Streit der Psychologisten und Formalisten in der modernen Logik*, Leipzig, Englemann, 1902, pp. 93.
R. Eisler, *Studien zur Werttheorie*, Leipzig, Duncker und Humblot, 1902, pp. xii., 112.
W. Wundt, *Grundzüge der physiologischen Psychologie*, fünfte Auflage, Band 1, Leipzig, W. Engelmann, 1902, pp. xv., 553.
H. Cohen, *System der Philosophie*, erster Theil, *Logik der reinen Erkenntniss*, Berlin, B. Cassirer, 1902, pp. xvii., 520.
G. Villa, *Einleitung in die Psychologie der Gegenwart*, übersetzt von C. D. Pflaum, Leipzig, Teubner, 1902, pp. xii., 484.
I. Vanni, *La teoria della conoscenza*, Roma, 1902, pp. 54.
G. Vidari, *Elementi di etica*, Milano, Hoepli, 1902, pp. xvi., 334.
B. Croce, *Estetica*, Milano, R. Sandron, 1902, pp. xx., 550.

VII.—PHILOSOPHICAL PERIODICALS.

PHILOSOPHICAL REVIEW. Vol. xi., No. 1. **E. Ritchie.** 'Notes on Spinoza's Conception of God.' ["What is meant by 'God,' 'substance,' *causa sui* is universal existence, or *being itself*. God is the 'is' of all things." But is not 'being' a vague abstraction? Not for Spinoza, whose deduction is from being as fact, not from being as idea. Hence the 'unity' of God, which excludes division within as well as addition from without. Hence also the nature of the 'attributes': which "are infinite expressions of the all-inclusive infinite existence". The infinity of the attributes (only two of which enter into and condition our experience) simply implies the illimitable reality of being: Spinoza asserts in this way the inexhaustibility of the universe of existence, the 'perfection' of God. Note further that God's essence is activity; the Eleatic thought is combined with the Aristotelian. Misunderstanding of this point is largely due to Spinoza's mathematical method. Finally, God as 'being absolutely infinite' is consciousness *per se*, eternal, all-embracing and self-sufficient.] **F. Thilly.** 'Soul Substance.' [Substance may mean (1) the logical *prius*, that which does not compel us to think of a bearer or support when we are thinking of it itself. Here we deal with a purely logical relation; nothing is predicated of the bearer as reality; we may use the conception of 'substance' without objection, whether in the physical or the mental sphere. (2) We may mean by substance "the relatively constant element or elements in our experience, without regarding these as separate, independent entities". Here we declare that the thought relation is a real relation, but we do not separate the substance from its accidents. The usage is unobjectionable. (3) We may make substance "exist apart from its accidents, as something that is actually the bearer of qualities, powers, events and occurrences"; and we often combine with this view the notion of absolute permanence. Here we enter upon metaphysics. "The validity of the notion of soul substance will depend entirely upon its ability to explain the facts, and the whole problem is coextensive with the problem of philosophy."] **J. H. Maccracken.** 'The Sources of Jonathan Edwards' Idealism.' [The thesis of the paper, worked out in detail, is that the *Clavis Universalis* of Arthur Collier was the work that first turned Edwards' thought towards idealism. The tract was published in London, 1713. "The whole attitude of Edwards towards idealism is that of Collier rather than of Berkeley. The resemblance to Malebranche and the difference from Malebranche are both explained, if we find the source of the resemblance in the transformed theory of Malebranche presented by Collier. The fact that Edwards read Collier in the light of Locke and Newton would explain any resemblance there may be between Edwards and Berkeley."] **W. P. Montague.** 'Professor Royce's Refutation of Realism.' [Royce classifies ontological systems by their attitudes towards a single epistemological problem, the question of the relation of the idea to its object. He then defines realism by a confusion of the *ratio cognoscendi* with the *ratio essendi*. "The independence of an object is not what makes it real, it is what makes us aware that it is real." Royce is followed through his consideration of relations and

independence, and through his application of the realistic theory to the dilemma of pluralism and monism. "Mistaking the experiential evidence of realism for realism itself," Royce "forces upon the realist the strange conclusion that such independence as is implied by and indicative of the numerical separateness of object and idea carries with it a total inability of these two to interact, or to correspond, or to be in any way related.] Summaries of Articles. Notices of New Books. Notes.

PSYCHOLOGICAL REVIEW. Vol. ix., No. 1. **G. S. Fullerton.** 'The World as Mechanism.' ["If the conception of mechanism seems to us absurd, it is because we imperfectly comprehend what that conception is, as it is gradually growing clearer to science. If we deny the existence of material causes, it is because we confound the notions of causality and activity, or erroneously assume that a cause can only be something occult and mysterious, which must be eschewed by science. If we repudiate natural necessity, it is because we fail to perceive that the word 'necessity' is an ambiguous one. If we insist that science cannot offer any explanation of the occurrences of the material world, it is because we give the word 'explanation' an unjustifiable meaning." These remarks are directed against Ward, Pearson and Mach. As for the reduction of the living body to a machine, we must remember that certain machines are apparently selective; that certain organisms, of a lower kind, are apparently machines; and that Descartes drew the line only at man. Moreover, the bringing of "things widely diverse under the same general concept does not mean that the differences which distinguish them are obliterated": the organism remains organism, as much after the mechanistic interpretation as before. The difficulty of 'minds' will be dealt with in a later paper.] **C. H. Judd.** 'Practice and Its Effects on the Perception of Illusions.' [The Müller-Lyer "illusion disappears after practice. It disappears, not by any process of judgment or any process of indirect correction. The line comes to look differently than it did at first." "A mere change in the length of lines, or even the more marked changes in obliquity of the added lines and in the position of the whole figure, were no hindrance to the transfer of the effects of practice" (against Thorndike and Woodworth). The author utilises his results for a genetic theory of perception in particular, and "for the general genetic study of mental life". Stress is laid upon the fact that introspection is inadequate to the gradual change of perception.] **F. C. French.** 'Mental Imagery of Students: a Summary of the Replies Given to Titchener's Questionary by 118 Juniors in Vassar College.' [All members of the class "are able to call up visual, auditory and tactile images. Only one or two in each case are lacking in either taste, smell, temperature or motor images. This almost universal capacity for all kinds of sense imagery" has two causes: (1) the subjects are young women; (2) a relatively large number of tests is offered for each class of images. Generalising, one might say that "the mind in most people is capable by effort of all kinds of sense imagery, although as a usual thing its content is limited to one or two special forms".] Discussion and Reports. **J. M. Baldwin.** 'Notes on Social Psychology and Other Things.' [Notes to 'Social and Ethical Interpretations'. The socionomic and the social; animal companies and human societies; the process of social organisation: imitation; selective thinking; the science of society.] **S. F. Maclennan.** 'The Image and the Idea.' [Imagery and reference, terms and relations, structure and function, cannot be divorced. Sensationalism and intellectualism, associationism and transcendentalism, are alike one-sided. "Meaning is the complete projected experience, consisting, from one point of view, of a series of imagery, from another of a dynamic transition from one image to another." "Ideation as

reference is embodied in determinate forms of activity, which in their initiation and discharge implicate the concrete imagery which furnishes the base for each discharge and illuminates its course."] Psychological Literature. New Books. Notes.

INTERNATIONAL JOURNAL OF ETHICS. Vol. xii. No. 2. **Harald Höffding.** 'Philosophy and Life.' [Philosophy both consciously works out the problems of life, and also symbolises unconscious tendencies in life. The philosopher is confronted by an irrational incompatibility between the form and content of experience. It is the function of the philosophy of religion to harmonise our various *Weltanschauungen*.] **W. A. Watt.** 'The Morality of Private and International Action.' [Moral conceptions can in some degree be applied to the acts of states. The state is to be regarded as a moral organism, on the whole.] **J. H. Hyslop.** 'The Temperance Question.' [The drink-evil should be attacked by controlling the drinker, not by restricting the sale of drink. Habitual drunkards are best controlled by appointing guardians to receive their wages on G. W. Swan's system.] **Zona Vallance.** 'Women as Moral Beings.' [Unless intelligent women have more rights as against their husbands they may refuse the burdens of marriage. They should be put more on a financial and legal equality, and should be remunerated for the duties of motherhood.] **B. Bosanquet.** 'The Dark Ages and the Renaissance.' [A study of the intellectual history of Europe, showing that the seeds of the Renaissance may be traced back through the Dark Ages as far as the Christian Era.] **S. McC. Lindsay.** 'The Modern Workman and Corporate Control.' [An excellent account of the advantages and disadvantages experienced by the modern workman from the growth of the trust-system.] **J. Spens.** 'The Ethical Significance of Rossetti's Poetry.' [Rossetti deals with sensations and emotions, but regards them from a highly spiritual point of view.] Discussion. A further Rejoinder to Prof. Ritchie, by J. M. Robertson. Book Reviews.

REVUE PHILOSOPHIQUE. July, 1901. **Dr. E. de Cyon.** 'Les bases naturelles de la géométrie d'Euclide.' [Our conceptions of space are based on immediate perceptions of it which we acquire by means of the semi-circular canals. Investigations into flight of animals, etc., prove that principal definitions and axioms of Euclid are based on such sense-experience, while non-Euclidian geometries are the product of pure thought.] **F. Le Dantec.** (I.) 'La méthode déductive en biologie.' [The ultimate elements of cell-life escape our observation. We must study more complex biological organisms and draw inferences as to happenings of cell-life.] **Goblot.** 'La musique descriptive.' [An essay in musical psychology.] **Blum.** 'Le mouvement pédologique et pédagogique.' Analyses et comptes rendus. August, 1901. **Bouglé.** 'Le procès de la sociologie biologique.' [A reply to MM. Novicow and Espinas' objections to author's contention that biological conceptions are misleading when applied to sociological problems.] **Récéjac.** 'La philosophie de la grâce' (I.). [The order of Nature. Dualism between orders of 'Nature' and of 'Grace'. Miracles.] **F. Le Dantec.** 'La méthode déductive en biologie' (fin). [Deductive method applied to study of heredity.] Analyses et comptes rendus. Revue des périodiques étrangers. September, 1901. **Dr. Gustave Le Bon.** 'Les projets de réforme de l'enseignement.' [Serious indictment of methods in vogue at French Universities. They consist entirely of book-work and learning by rote.] **Récéjac.** 'La philosophie de la grâce' (fin). [The 'supernatural' and 'original'. Holiness. Springs of grace. Conflict between grace and liberty.] **F. Paulhan.** 'La suggestibilité d'après M. A. Binet.' Analyses et comptes rendus. Revue des périodiques

étrangers (*Psychological Review*). Correspondance. October, 1901. **H. Höffding.** 'La base psychologique des jugements logiques' (I.). [Logical reasoning gets its subject-matter either from intuitions or associations. The former are either sensations, perceptions or *re*-presentations. Relation of judgment to each of these. The work of judgment; its three forms.] **L. Bray.** 'Le Beau dans la Nature.' [An examination of objects in vegetable and animal worlds to which beauty commonly ascribed shows that beauty = distinction; distinction attracts attention of opposite sex and hence is closely bound up with conservation and reproduction of the species.] **J. J. van Biervliet.** 'L'Homme droit et l'homme gauche' (Recherche expérimentale). **G. Richard.** 'Le réalisme sociologique et le catholicisme social.' (Revue critique.) Correspondance. Analyses et comptes rendus. November, 1901. **G. Tarde.** 'La réalité sociale.' [Misleading to speak of a society as a 'social organism'. It is a *totality*, objective yet spiritual, because each of the component individuals finds the idea of the totality exteriorised in the forms of speech, habits of thought, institutions, etc., which are the work of thousands of generations and by which he feels himself constrained.] **M. Bernès.** 'Individu et Société.' **H. Höffding.** 'La base psychologique des jugements logiques' (II.). [Logical subject and predicate = psychological *terminus a quo* and *ad quem*. Predicate further determines a partially undetermined subject. We pass from cognition to re-cognition. Judgment and existence.] Notes et discussions. Analyses et comptes rendus. Revue des périodiques étrangers. December, 1901. **A. Fouillée.** 'Les jugements de Nietzsche sur Guyau, d'après des documents inédits' [*i.e.* Nietzsche's marginal notes on *l'Esquisse d'une morale sans obligation ni sanction*. The two writers agree that every healthy organism accumulates a surplus of power, but Guyau says this is spent *in the service of* others, Nietzsche, *at their expense*.] **F. Paulhan.** 'La simulation dans le caractère' (I.). [A study of psychical 'mimicry,' instance taken being that of an assumed insensibility.] **Palante.** 'Les Dogmatismes sociaux et la libération de l'individu.' [Author classifies 'Social dogmatisms' as *a priori* or *posteriori*. The former are 'transcendental' (Plato, Kant, Fichte), or 'immanent' (Hegel), while the latter attempt to base solidarity of race on (1) biological, or (2) economic considerations. He dismisses all in favour of individualism "posited as a tendency, not a dogma".] **G. Richard.** 'Travaux sociologiques sur le droit de punir.' **G. Belot.** 'L'Année sociologique.' (Revue critique.) Analyses et comptes rendus. Revue des périodiques étrangers (*American Journal of Psychology*). Correspondance. January, 1902. **H. Bergson.** 'L'effort intellectuel.' [Author discusses intellectual effort as it appears in (1) recollection; (2) intellection in general. In both a transition from a schema to an image or images takes place.] **G. Milhaud.** 'La Loi des quatre états.' [Conte's three-fold law gives no place to that deep-seated tendency of the human soul to find vent for the principle of immanence, for its inner life, which is revealing itself on all sides in the present day.] **Dr. G. Dumas.** 'L'État mental de St. Simon' (I.). Notes et Discussions. Analyses et comptes rendus. Revue des périodiques étrangers (*The Monist*). February, 1902. **V. Brochard.** 'La Morale Eclectique' [*i.e.*, morality in vogue at present day. Too loosely reasoned to be able to hold together for long.] **Evellin et Z.** 'L'Infini nouveau: le théorème de P. du Bois-Reymond.' **A. Godfernaux.** 'Sur la psychologie du mysticisme. Variétés. Revue générale (F. Picanet. Travaux d'ensemble sur la scolastique et le Néo-Thomisme.) Analyses et comptes rendus. Revue des périodiques étrangers. March, 1902. **E. de Roberty.** 'Qu'est-ce que la Philosophie?' [Not enough to say "it is a way of thinking the world"; science, art and practice all do this. The

way in which philosophy does so is at once synthetic and apodeictic.] **Dr. G. Dumas.** 'L'État mental de St. Simon' (II.). **A. Bauer.** 'Des méthodes applicables à l'étude des faits sociaux.' [Starting from the *different classes* which constitute society we must study (1) their characteristic tendencies; (2) the influences, internal and external, which tend to modify these.] **G. Richard.** 'Sociologie et science politique d'après les travaux récents.' Analyses et comptes rendus. Revue des périodiques étrangers (MIND). Correspondance. April, 1902. **L. Dauriac.** 'Les problèmes philosophiques et leur solution dans l'histoire d'après les principes du néo-criticisme.' [A critical discussion of Ch. Renouvier's works.] **G. Dunan.** 'La perception des corps' (I.). [Space is not a unity and hence given potentially in every externalised sensation, but a multiple, consisting of indivisible points. It is perceived by sight, not touch.] **Dr. G. Dumas.** 'L'État mental de St. Simon' (fin.). **G. Richard.** 'Sociologie et Science politique' (II.). (Revue générale.) Analyses et comptes rendus. Revue des périodiques étrangers.

REVUE DE MÉTAPHYSIQUE ET DE MORALE. 9e année. No. 4. Juillet, 1901. **G. Milhaud.** 'L'idée d'ordre chez Aug. Comte.' [Comte's views were largely caused by his love of order. His relative valuation of historical epochs is in proportion to their orderliness—to the degree in which all the members of a given society held the same opinions. His 'theological' and 'metaphysical' stages have no exact historical counterparts; he speaks as if they had, because he likes to conceive things as forming orderly groups. His 'positive' stage is valued by him mainly because he thinks people cannot differ so much in opinion, when their attention is confined to facts of experience as when they are imagining metaphysical and theological entities. He includes the laws of nature among facts chiefly because he cannot endure the idea of a world wanting this orderly element. His view of the special sciences shows his liking for 'hierarchical' order, (1) in that he holds the difference between the more concrete and the more abstract sciences, on which their logical order depends, to be real and ultimate; (2) in that he makes the value of the abstract sciences proportionate to the light they throw on the most concrete, sociology. Finally his conception of progress is limited by his views (1) that, since it is orderly, we cannot change its direction, (2) that its goal, being merely 'social consensus,' is very nearly attained.] **E. Le Roy.** 'Sur quelques objections adressées à la nouvelle philosophie.' [Concludes article begun in last number. III. By telling us what matter *is*, will show why, in spite of the 'contingence' of its laws, science is practically successful. Matter (*a*) as idealists say, consists of 'images'; (*b*) as common sense (realism) says, persists even when not perceived. This 'antinomy' is capable of the following clear and consistent solution: (*a*) is true of 'actual,' (*b*) of 'pure' 'matter'. 'Pure matter' is the 'potentiality' of which 'actual matter' is the 'realisation,' and since the latter is 'a tendency to repetition,' the former is 'a capacity for habits'. Both pure spirit and pure matter are unreal and symbolic; 'matter' denotes the continuum between them, and is 'the only concrete reality': yet, according as you choose to 'move' over this continuum towards the one extreme or the other, the one towards which you move becomes more, the other proportionately less, true. *Thus* matter is seen to 'resolve itself' into mind. *Consequently* to prefer the doctrine 'Only mind is real' to the doctrine 'Only matter is real' may be a duty, but cannot be a necessity: yet 'from the standpoint of metaphysical speculation' the latter is self-contradictory. *Consequently* it is our duty to believe the former *and* (which is the same thing) to destroy matter; but matter is a necessary means to the performance of this duty, and hence spiritual-

ism does not involve a 'radical denial of matter'. To sum up:—Matter is '*de iure*' an 'instrument of progress,' '*de facto*' 'a restriction of our liberty': the success of science proves that we can do what we ought, namely make it '*de facto*' what it already is '*de iure*,' and the reason why we can is that spirit created matter in its own 'obscure' image.] **L. Brunschvieg.** 'La philosophie nouvelle et l'intellectualisme.' [Agrees with M. Le Roy on points which 'properly understood, would be essential,' but must defend the rights of 'clear thought' in answer to his challenge. I. The New Philosophy assumes that 'thought' can only consist of analytic reasoning and mere observation; and since neither of these can give us knowledge of reality, it takes refuge in 'action'. But, in fact, Intellectualism, especially since Kant, believes in 'the *synthetic* activity of thought'; and, just through ignoring this function of thought, M. Le Roy falls into Scepticism, Mysticism and self-contradiction, since reality, being, on his view, 'transcendent,' contains *both* pure matter *and* pure spirit, and is consequently 'discontinuous'. Thus II. M. Le Roy's 'living' of matter means *both* 'identifying oneself with it' *and* 'unifying' it, which are really incompatible, since the latter involves 'intelligence'; and III. his view, that science wholly consists in establishing a convenient language, neglects the two facts, (*a*) that it must be constantly verified by an appeal to facts; (*b*) that though its 'symbols' and the *terms* of its 'formulæ' may be arbitrarily changed, the *relations* expressed by the latter must remain the same. Finally IV. in making the emotions of 'invention' the *sole* criterion of truth, M. Le Roy forgets that these are equally felt by him whose supposed discoveries are mistakes: Intellectualism recognises that 'the characteristic property of mind' is to 'prescribe a direction to itself,' namely 'the liberty of *reason*,' 'rational *necessity*'; M. Le Roy is no better than a materialist, when he makes mind essentially 'transcendent' and 'contingent'.] **P. Landormy.** 'Remarques sur la philosophie nouvelle et sur ses rapports avec l'intellectualisme.' [M. Le Roy fails to distinguish that Intellectualism, while not denying that 'obscure thought' *de facto* precedes 'clear,' maintains only that both 'obscure' and 'clear' '*depend*' *de iure* on 'thought itself': it holds that everything is 'intelligible,' not that we already understand everything. The 'new philosophers' hold so fast to the 'liberty' of mind, that they think it may choose arbitrarily 'not to be what it is,' *i.e.*, to reject the law that 'its object is identical with itself,' a law, which 'by a *free* decree, it makes into the *necessary* form of its existence'. They do not see that 'action' presupposes both matter and spirit: the Intellectualist agrees that it is the true reality, but he means by this that 'the intelligible and the sensible' 'are only distinct for our imperfect consciousness'.] Étude Critique. Supplément.

Revue Néo-Scolastique. No. 29. **D. Nys** ('La définition de la masse') calls attention to the frequent employment in our days of the word mass. The investigation of mass belongs, properly speaking, to mechanics. But the tendency at the present day is to give a mechanical interpretation to nature, and to reduce, in the last analysis, everything which is to the two factors, mass and motion. D. Nys maintains that the discussion of mass has its place in metaphysics as well as in the physical sciences, and that mass, regarded from a metaphysical point of view, may be defined as the dimensive quantity of a body, or, in other words, that it is by its quantity that body fulfils the functions of mass and possesses the properties that are ascribed to this mechanical factor. **J. Halleux** ('L'hypothèse évolutionniste en morale': suite) examines the views of Mr. Herbert Spencer on the relation between evolution and morality as set forth in his first article on the subject. He discusses Mr.

Spencer's theories on conduct, the evolution of conduct, the distinction between moral and immoral conduct, and the different ways of judging of conduct. He evidently wishes to be very fair to Mr. Spencer, and where he finds agreement possible is glad to agree with him. When he dissents from Mr. Spencer's views, and on all the larger issues this is invariably the case, he states his reasons for dissent. **A. Thiéry** ('Le Tonal de la Parole': suite) continues his studies on the musical character of the speaking voice. His present article, though not so extremely technical as his first article on the subject, is, nevertheless, technical enough to make it advisable that a critic who is not a musician should abstain from expressing any opinion on its value. The last article of the number ('Pensées d'un évêque sur le juste salaire') summarises from an article in the *Collationes Brugenses* the views of the Bishop of Bruges on a fair wage. The Bishop contends that in the normal state of society and industry the wage paid should be sufficient to secure the complete subsistence of the workman, and under this head of complete subsistence he includes whatever may be necessary in order that a workman may fulfil his obligations as head of a family. If it should become impossible for the more numerous class to procure subsistence by means of work, it is the duty of the public authorities to inquire into the causes of this and to provide a remedy.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. Bd. xxvii., Heft 3. **H. Ebbinghaus** und **J. A. Barth.** 'Arthur König.' [Necrology, with portrait.] **C. Stumpf.** 'Ueber das Erkennen von Intervallen und Accorden bei sehr kurzer Dauer.' [Report of two experimental series, prompted by the work of M. Meyer 'Ueber Tonverschmelzung' and R. Schulze 'Ueber Klanganalyse'. Criticism of the technique of Schulze's experiments: his stimulus-times are probably illusory, and his tone-intensities almost certainly unequal. (1) Determination of the interval formed by two simultaneous tones (bottle tones). Description of apparatus; regulation of time of stimulation. (*a*) The simple tone is hardly ever confused with an interval. (*b*) The octave is most frequently taken for a simple tone; the other intervals do not show any very clear uniformity in this regard, though the more consonant intervals, on the whole, have the advantage. (*c*) The judgments are, in general remarkably accurate. As regards relative ease of cognition, the octave holds the first place for all observers: the series is otherwise somewhat irregular, though (individual differences apart) those intervals are most easily recognised which have the most pronounced harmonic character. (*d*) Confusions obtain, in the great majority of cases, between neighbouring intervals, and are far more frequent for narrow than for wide intervals. (2) Determination of chord tones. (*a*) The more tones given, the more are heard. (*b*) The more tones given, the more, proportionately, are not heard. (*c*) The deepest tone is very rarely passed over: for the rest, the one of the two observers missed even-numbered, the other odd-numbered tones more easily. The result is due either to chance or to individual differences of experience and habit. (*d*) The dissonant chords given were nearly always rightly heard. The record ends with an interesting case of analytic inability on the part of a nervously disposed observer.] **H. B. Thompson** und **K. Sakijewa.** 'Ueber die Flächenempfindung in der Haut.' [Study of the effect of varying pressure upon cutaneous discrimination of size. (1) If the surfaces are applied to the skin with the same pressure, a change of pressure between the limits of 20 and 250 gr. has but a small influence upon the sensible discrimination of their magnitude. (2) Our discriminative capacity for cutaneous size is approximately the same at all parts of the body not practised in touch.

(3) Judgment of difference of size depends upon many secondary criteria: pressure, tension, localisation by the underlying bones, etc. The authors seem not to have known of Major's work.] **K. Marbe.** 'Bemerkung.' [Reply to a criticism by Wiersma.] Literaturbericht. Bd. xxvii., Heft 4. **T. Lipps.** 'Zur Theorie der Melodie.' [Detailed critique of M. Meyer's recently published 'Contributions to a Psychological Theory of Music,' and restatement of the author's own theory. We notice two points. (1) An interesting section deals with "aesthetische Abweichungen von Normalformen," in connexion with the overestimation of octave, fifth and major third, and underestimation of the minor third, found by Stumpf and Meyer. Lipps works out an explanation along the lines followed in his well-known work upon optical illusions. (2) The "Bild der Melodie aus den Tönen der diatonischen Leiter" is drawn as follows. "The melody oscillates, according as its tonica is more or less definitely introduced, about the position of equilibrium given in this tonica. It oscillates, more especially, between fifth and fourth. By reason of the opposition of these two secondary tonicas and their rhythmical systems, it settles down (einmündet) finally and stably into this position of equilibrium. The fourth has, in this process, a fourfold significance (the fourth not only complicates the melody, but brings into it the strongest opposition to the tonica; its dissonance makes the natural movement from $b\flat$ and d to the tonic c both more natural, more intrinsically necessary, and also more definite in direction, more exclusively a movement upon c; and this same dissonance with $b\flat$ or d empowers it to bring about a final and valid conclusion). To this we must add the twofold nature of the fourth tone of the scale, *i.e.*, its capacity to act first as natural seventh of the fifth and then as fourth, and so to lead flowingly from the fifth to the tonica."] **W. A. Nagel.** 'Stereoskopie und Tiefenwahrnehmung im Dämmerungsehen.' [Repetition and variation of Helmholtz' experiment prove that the rods, as well as the cones, are capable of stereoscopic vision. Daylight vision gives a noticeable displacement of the middle vertical at ± 3 mm., twilight vision at ± 10-12 mm.] **W. A. Nagel.** 'Ueber die Wirkung des Santonins auf den Farbensinn, insbesondere den dichromatischen Farbensinn.' [The author is a deuteranope ('green blind'). He sums up his santonin experiments as follows. "The fading-out of the long-wave half of the spectrum and the correlated violet (blue) vision of dark surfaces (found also during the stage of yellow vision) depends not upon a phenomenon of disability or abrogation, but upon a state of stimulation of the visual organ": there is no phenomenon of disability at any stage of the poisoning. Filehne's hypothesis of a sensitising effect of santonin upon the violet-sensitive substance is not proven; at what point of the organism the drug operates is still an open question.] **W. A. Nagel.** 'Zwei optische Täuschungen, nach Beobachtungen von Prof. Danilewsky mitgetheilt.' [(1) Extension of Thompson's 'rinsing movement' illusion to a disc seen in indirect vision; (2) wavy appearance of tuning-fork tines seen through a radial slit of a rotating disc. A simple explanation is offered in both instances.] Literaturbericht. Bd. xxvii., Heft 5 und 6. **T. Ziehen.** 'Erkenntnisstheoretische Auseinandersetzungen.' [This is the first of a series of papers in which Ziehen will compare the results of his own 'Psychophysiologische Erkennthisstheorie' (1898) with other, old and new systems. It discusses the epistemology of Avenarius (the 'Kritik der reinen Erfahrung,' the 'Menschliche Weltbegriff' and the articles on the 'Begriff des Gegenstandes der Psychologie'). Ziehen presupposes the reader's knowledge both of his and of Avenarius' works. For this reason alone, apart from the mass of detailed criti-

cism which it contains, the paper cannot well be summarised. We note that, for Ziehen, "der erkenntnisstheoretische Fundamentalbestand ist ausschliesslich der, dass Empfindungs- und Vorstellungsreihen gegeben sind". He concludes that Avenarius has rendered two imperishable services to epistemology: the "Inventaraufnahme der menschlichen Aussagen," and the "Bekämpfung der Introjection". His positive attempt to lay the foundations of epistemological science is, however, unsuccessful. "Schon den erkenntnisstheoretischen Fundamentalbestand hat er nicht klar und auch thatsächlich nicht richtig wiedergegeben."] **W. Uhthoff.** 'Ein weiterer Beitrag zur angeborenen totalen Farbenblindheit.' [Description of three new cases. (1) In two of these, pathological changes were noted in the neighbourhood of the fovea centralis. Uhthoff thinks that accurate ophthalmoscopic examination would reveal such changes more often than is currently supposed. (2) In two cases, again, central scotomata were demonstrable: absolute in the one, relative at least in the other. (3) In all three cases, peripheral acuity of vision decreased continuously with degree of eccentricity. (4) In one case—a single exception to the rule—adaptation to dark proceeded no more quickly than for the normal eye. (5) The visibility of Röntgen rays was, in one case, well established. This point, however, requires further investigation.] **E. Storch.** 'Ueber die Wahrnehmung musikalischer Tonverhältnisse.' ["All relations in perception and thought, *i.e.*, all relations which objects bear to one another, are nothing else than the mental representation of our muscular activity." This, the central thought of the author's 'Muskelfunction und Bewusstsein,' is here applied to relations obtaining among objects of perception, which play no part in thought, but yet are wholly determinate and unequivocal: the relations of musical tones. Musical relations are to be regarded as "psychische Bewerthung der durch die Kehlkopfbewegungen erzeugten cerebralen Veränderungen," are referable to "die bei jeder Tonwahrnehmung anklingenden motorischen Erinnerungsbilder des Kehlkopfes". The conception of a 'phonetic space' is worked out in detail, and the author arrives at a set of 'physiological' interval ratios, differing from those both of the pure and of the tempered scale.] **A. Borschke** und **L. Hescheles.** 'Ueber Bewegungsnachbilder.' [Study of movement after-images by an ingenious apparatus, based upon that of Exner. (1) Within limits, the velocity of the after-image is directly proportional to that of the stimulus; (2) increases with the number of stimuli in the time-unit; (3) other things equal, increases with the clearness of the stimuli; and (4) increases with the duration of observation. (5) With an observation-time of 30 sec., under the conditions of the experiment, the after-image lasts for 15 sec.] **R. Du Bois Reymond.** 'Zur Lehre von der subjectiven Projection.' [In order to form an idea of the visual world of animals whose eyes are more laterally placed than our own, the author constructed 'animal spectacles' of black cardboard and mirrors. The instrument failed of its primary object, since the mirror pictures were projected in the direction of the natural axis of regard. Two experiments, however, binocular and monocular, are described, which are of importance for an understanding of the principle of projection of sense-impressions.] Besprechungen. [R. Burckhardt on J. Soury's 'Le système nerveux central'; F. Kiesow on H. Oehrwall's 'Modalitäts und Qualitätsbegriffe in der Sinnesphysiologie'.] Literaturbericht.

KANTSTUDIEN. Bd. vi., Heft 2 und 3. **W. Kabitz.** 'Studien zur Entwicklungsgeschichte der Fichteschen Wissenschaftslehre aus der Kantischen Philosophie.' [The present paper only deals with Fichte's views previous to the composition of the Wissenschaftslehre (winter of 1793-94). H.

Kabitz' object is to show how Fichte's philosophical views and personal character, as exhibited before he read Kant, influenced his understanding of Kant and led to his subsequent differences from him; but he fails to present clearly either what he takes to be Fichte's points of difference from Kant or the evidence on which his view is based. He adds an Appendix of hitherto unpublished MSS. writings, only one of which seems to contribute any new evidence relevant to his object, showing that in 1785 Fichte was a convinced Determinist; but many of them have considerable biographical interest. (1) Before Fichte read Kant (August, 1790) he was (*a*) a Determinist (*b*) resolved to adopt a life of action and reform, rather than one of study, sharing Rousseau's depreciation of purely intellectual culture. There is no evidence that he had read Spinoza; his Determinism may have been due to Crusius, and in other respects his views seem to have been in harmony with Leibniz. (2) H. Kabitz gives his view of Kant's 'real objects' in his three Critiques: in which view much is doubtful, nothing new, all irrelevant. Fichte had no 'real taste' for Kant, till he passed from the first to the second Critique, which led him to accept Free Will and reject Hedonism. H. Kabitz says that Fichte was not so much interested in Kant's 'positive' results, *i.e.*, the establishment of Mathematics and Natural Science, as in the 'negative,' under which he seems to include both the impossibility of Metaphysics and the 'practical' proof of Freedom. (3) Maintains that in 1790-93 Fichte increased his differences from Kant in direction of demanding a single supreme principle for all philosophy: he nowhere does so, but Reinhold did, and H. Kabitz argues (inconclusively) that Fichte shows Reinhold's influence. Only in a review of 1793 does Fichte distinctly state that Practical Reason is 'the unconditioned' on which Theoretical Reason depends. Meanwhile the evidence only shows that Fichte was much exercised with the relation of Freedom to Natural Necessity, a point on which he finds Kant 'obscure'.] **F. Marschner.** 'Kant's Bedeutung für die Musik-Aesthetik der Gegenwart' (Schluss). [The former article dealt with those points in Kant's Æsthetics which support 'formalist' theories of Music. The present one has three parts. (1) and (2) are supposed to show Kant's influence upon theories which put the essence of Music in its 'content'. They describe briefly, but with a bewildering mass of detail, theories resembling Kant's in one or more points. (1) includes Spencer, Emerson and F. von Hausegger, who share with Kant the startling view that Music is a means of expressing emotions. (2) includes Schopenhauer, Wagner, Nietsche, R. Fuchs, A. Seidl and F. von Feldegg, who resemble Kant in relating Music to a supersensible reality and to the distinction between 'sense' and 'intellect,' and in maintaining it to be either 'sublime' or 'beautiful' or both. The author here criticises: There is a 'fallacy' in Fuchs' conclusion that rhythm must mean will, because no intellectual power could 'upset the intellectual truth that $2 \times 3 = 6$,' whereas, in rhythm, 2×3 (=two bars of three beats each) are not equal to 6; 'the sublime is the contemplation of magnitude engaged in self-defence'; Bach's music is not only 'intellectually' but also 'musically' sublime; and, historically, music has been both sublime and beautiful. Finally (3) tells us that Kant's conception of synthesis has not yet been sufficiently used in the theory of Music: H. Riemann attempted this use; Fechner suggested it; and the author here sketches it for Harmony, Rhythm and Melody.] **A. Vannérus.** 'Der Kantianismus in Schweden.' [I. A bibliography of 'Kant-literature' in Sweden. II. A short account of Kant's relation to Swedish philosophy. He was first noticed in 1786, when 'Lockianism dominated the Universities,' and from 1794-98 the battle between his admirers and those of Locke and 'common sense'

was at the hottest. From him is derived 'the national Swedish philosophy' of C. J. Boström (fl. *circ.* 1830-40), a 'rational' Idealism, *i.e.*, 'in Swedish terminology,' one which holds that 'the true actuality' is superior not only to space but also to time and change: H. Vannérus deplores that this Idealism *par excellence* has had no exponent in Germany! 'Boströmianism,' still dominant in Sweden, accepts in the main Kant's view of 'given actuality,' but believes it can determine 'the true substance,' which is an 'absolute divine Reason,' and thus rejects Kant's restriction to 'formalism' in Metaphysics, as it does also in Ethics, though accepting his anti-hedonism.] **P. Natorp.** 'Zur Frage der logischen Methode.' [Mainly an account of E. Husserl's 'Prolegomena zur reinen Logik,' which maintain that the laws of Logic do not state how we actually do think, nor even, at bottom, how we ought to think: although, like mathematical propositions, they can be 'expressed as' practical maxims, no psychological or 'normative' reference enters into their 'content'. Husserl exposes in detail the absurdities of the opposite view, now prevalent, which persists in confusing truths, under the name of 'content' of psychical states or acts, with these states or acts themselves: guilty of such 'Psychologism' are Mill, Sigwart, Erdmann, Heymans, Wundt, Riehl, Lipps, Cornelius; and of a similar fallacy Mach and Avenarius. Natorp agrees with Husserl in all this, but urges (1) that 'Kant and his school' (*e.g.*, Cohen) are not guilty of Psychologism: the psychological meaning of Kant's words 'Understanding,' 'Reason,' etc., is not used by him to solve logical problems, and Husserl himself uses psychological *words*, *e.g.*, 'insight,' 'reasonable,' '*a priori*'; (2) that Husserl himself is not clear about the relation (*a*) of his truths or Platonic 'Ideas' to the psychological 'experiences' ('insights'), in which he says they are 'realised' (*b*) of 'formal' to 'material' or of logical objectivity to 'Gegenständlichkeit'. Natorp suggests that both (*a*) and (*b*) are logical relations (of the same kind?): he says that Kant's Transcendental Logic treats of them, and that he has himself developed that treatment.] **F. Krueger.** 'Eine neue Sozialphilosophie auf Kantischer Basis.' [Criticises in detail three books by L. Woltmann: 'System des moralischen Bewusstseins,' 'Die Darwinsche Theorie und der Sozialismus,' 'Der Historische Materialismus.' These works are supposed to exemplify a tendency, which has existed for the last ten years, to apply the principles of German Idealism, and particularly of Kant, to Social Philosophy; but it is impossible to discover any thread of connexion between most of the opinions detailed, or in what sense they are 'based' on Kant. Author and reviewer both seem to regard Kant's principle that 'humanity is never to be treated merely as a means' (sense not defined) as the ultimate rule of conduct, and to consider that the course of history must be explained 'teleologically' (sense not defined): further that 'Darwin's theory' is not inconsistent with 'Socialism' (sense not defined), and that Marx's 'historical Materialism' neglects the influence of 'spiritual' factors upon the course of history.] Recensionen, Selbst-anzeigen, Bibliographische Notizen, etc.

Zeitschrift für Philosophie und Philosophische Kritik. Bd. cxx., Heft 1. **Johannes Rehmke.** 'Zum Lehrbegriff des Wirkens.' [To act means to be the condition of a change in another individual being. Every action in the world requires for its possibility the existence of at least two individuals; and in the world of things nothing acts on another thing without being reacted on by it.] **Friedrich Jodl.** 'Goethe und Kant.' [Goethe was greatly interested in Kant and studied his principal treatises with close attention; but their minds were so differently constituted as to preclude any real agreement.] **Jul. Bergmann.** 'Ueber den Begriff der Quantität.' [The first part

of an inquiry into the conception of quantity carried on with the aid of symbolical reasoning, and addressed only to mathematical readers.] **J. Lilienfeld.** 'Versuch einer strengen Fassung des Begriffes der Mathematischen Wahrscheinlichkeit.' [In estimating the probability of any specified occurrence it is not enough to assume the conditions under which alone it can occur: we have also to estimate the probability of the occurrence of those conditions. In estimating, *e.g.*, the chances of my throwing double sixes we have to reckon with the chances that the dice are not numbered, that they are not symmetrical, that they do not fall on a smooth horizontal surface, that they are not thrown at all, etc. The object of the writer is, therefore, to provide a formula covering all the possibilities in any particular case.] **E. Schwendler.** 'Die Lehre von der Beseeltheit der Atome bei Lotze.' [Lotze at first put forward a theory of the world as composed of multitudinous animated atoms existing and acting side by side with their creator. He afterwards came to look on the world more as the manifestation under various forms of a single absolute existence; and the question arises how far this view was compatible in his mind with the theory of animated atoms. The solution is reserved for a future article.] Recensionen, etc.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOCIOLOGIE. Jahrg. xxvi. Heft. 2. **E. Goldbeck.** 'Das Problem des Weltstoffes bei Galilei.' [Galileo is the first to show by cogent evidence that the substance of heavenly bodies is like in nature to that of terrestrial bodies, and so to finally overthrow the essential principle of the Aristotelian Cosmology. He attacks the Aristotelian conception of change; he shows that heavenly bodies are subject to change; he lays stress on the demonstrable affinity between the earth and the moon. Yet he did not push his assertions beyond the evidence on which they rested, which applied mainly to the planets. The sun and other self-luminous stars are still regarded as having a different nature. But this is no reason why they should not be studied and described by the ordinary scientific methods applicable to other matter.] **A. Vierkandt.** 'Die Selbsterhaltung der religiosen Systeme.' [Vierkandt names as grounds of the self-maintenance of the religious systems: 1. Imposture. 2. False statistic, *i.e.*, attending only to cases which make in favour of a belief to the neglect of those which make against it. 3. Judgment is adjusted to results; *e.g.*, it often happens that gods are only created by men when they have given proofs of their efficiency. 4. Unverifiable statements or impracticable demands are put forward. 5. The effects of suggestion are important. 6. Also those of fear. 7. Torture and divine judgments, as in the various kinds of ordeal. 8. Dreams and ecstasies. Vierkandt does not discuss how far the self-maintenance of a religion may depend on its truth, though he admits that this factor becomes of increasing importance as civilisation advances.]

PHILOSOPHISCHES JAHRBUCH. Bd. xv., Heft 1. **Haas.** 'Eine neue psychologische (psychophysische) Theorie.' [The writer criticises Münsterberg's theory of action, that 'there is no experience which is not grounded upon some motor impulse. That it agrees with anatomical science proves nothing in its favour; other hypotheses also agree. It is a theory of purely mechanical action, and neither psychological nor psychophysical.] **Rolfe.** 'Neue Untersuchung über die platonischen Ideen.' [The author concludes his series of articles by pointing out that Plato's ideas may be supposed to exist in God, and to be identical with God; that he himself understood them as things eternal and independent of God is not proved with any degree of certainty.] **Isenkrahe.** 'Der

Begriff der Zeit.' [In this, the first of two articles, Aristotle's definition of time, 'Numerus motus per prius et posterius,' is shown to be a tautology, and St. Thomas is blamed for following the Philosopher too closely. The idea of creation has given us that of duration which is not time, and Scholastics have understood time in a way that Aristotle could not conceive.] **Willems.** 'Die obersten Seins- und Denkgesetze nach Aristoteles und dem hl. Thomas.' [In this article it is pointed out that the principle of sufficient reason, on which that of causality depends, and that the principle of excluded middle are both merely particular ways of expressing the principle of identity.] **Niestroj.** 'Ueber die Willensfreiheit nach Leibniz.' [This is the first of two articles. Leibniz, denying the possibility of a state of absolute indifference of the will, says that it always acts according to its inclination, but denies that it acts by necessity, unless moral necessity. This is simply the destruction of free-will.] **Jacobi.** 'Der altägyptische Göttermythus,' etc. [This short paper is devoted to tracing certain likenesses between the Egyptian myths of the Gods and the Ionian philosophy on the one hand and the old German legends (Baldur, Loki, etc.) on the other.]

Rivista Filosofica. Anno iv., vol. v., Fasc. i., January-February, 1902. **B. Varisco.** 'La cosa in sè.' [Gives the substance of a recent German work by Wyneken interpreting the 'thing in itself' on the lines of Leibniz or rather of Bruno as a plurality of animated monads.] **C. Cantoni.** 'Studi Kantiani.' [Deals with the question of synthetic propositions *a priori*. Kant's sharp separation between the inner and outer cannot be maintained. The recognition of certain truths as universal and necessary is a gradual growth.] **G. Cesca.** 'Il Monismo di Ernesto Haeckel.' [Concluded from the previous number. Haeckel commits the mistake of attributing an objective and absolute value to various partial, provisional and subjective points of view. His philosophy leads to pessimism and nihilism.] **G. Zuccante.** 'Intorno alle fonti della Dottrina di Socrate.' [Xenophon should be read in the light of Plato, who enables us to complete the fragmentary indications of a higher Socratic doctrine furnished by the *Memorabilia*.] Rassegna Bibliografica, etc. Fasc. ii. March-April, 1902. **F. Momigliano.** 'I sentimenti e la teoria intellettualistica della sensibilità.' [The tendency of modern psychology, especially since Schopenhauer, has been to part off with increasing distinctness the emotional from the intellectual side of mind, and also from the sensuous perceptions.] **R. Mondolfo.** 'Spazio e tempo nella psicologia di Condillac.' [Condillac's treatment of space is vague and confused, oscillating between nativism and the denial of its objective reality. But he does not doubt the existence of time.] **G. Gentile.** 'L'unità della scuola secondaria e la libertà degli studi.' [The proposal to let each pupil at a secondary school choose a course of studies for himself arises from a mistaken idea of liberty. Human beings are only made free by the emancipation of the spirit, and that is only effected by a course of studies embracing language, history, science and philosophy.] **G. Buonamici.** 'Di alcuni fenomeni psicofisiologici.' [Certain phenomena observed in dreams may be explained by the assumption of a more than three-dimensional space.] **V. Laureani.** 'Se Dante Alighieri sia stato indeterminista o determinista.' [Dante professes in terms his belief in free-will. But in the school to which he belonged this merely meant liberty to be determined by reason. And there are passages in his great poem irreconcilable with the doctrine of pure arbitrariness.] **A. Faggi.** 'Sulla catarsi aristotelica nel dramma.' [Defends the view that Aristotle's 'Catharsis' implies a homœopathic purification of pity and terror.] Rassegna Bibliografica, etc.

VIII.—NOTES AND CORRESPONDENCE.

THE LATE PROFESSOR ADAMSON.

Prof. Adamson was born in 1852, in Edinburgh. His father was a solicitor and his mother the daughter of Mr. Mathew Buist, factor to Lord Haddington. She was left a widow when Robert was three years old, with six children and comparatively small means. But she had great force of character and intellectual vigour, and, as is still not unusual amongst the Scots, was ready for all sacrifices in order to secure a good education for her children. She not only guided their studies, but shared them.

Robert was an extraordinarily clever child—"decidedly the most talented pupil I have ever had under my charge," said one of his Headmasters—and his career in school was marked by a constant succession of bursaries and prizes.

He entered the University of Edinburgh, a small boy fourteen years of age, and graduated with First Class Honours in Mental Philosophy when he was eighteen, after having won a place amongst the prizemen in every department of the Faculty of Arts. He then won the Tyndall-Bruce Scholarship, the Hamilton Fellowship, the Ferguson Scholarship and the Shaw Fellowship—the two latter being open for competition to the Students of all the Scottish Universities.

After the close of his unique career at the University of Edinburgh he went to Heidelberg, and there began that acquaintance with German literature and philosophy which afterwards became so intimate and comprehensive. From Heidelberg he returned to Edinburgh as Assistant first to Prof. Calderwood and afterwards to Prof. Campbell Fraser. About this time he was also engaged on the staff of the *Encyclopædia Britannica*, and, having the run of the Advocates' Library—the best in Scotland—he indulged freely his taste for omnivorous reading, and spent what he used to regard as, from his point of view, the most fruitful years of his life.

In 1876, when he was twenty-four years of age, he was elected to succeed Prof. Stanley Jevons in the Chair of Logic and Philosophy at Owens College, Manchester. After seventeen years of admirable usefulness in all that concerns a Professor in a growing College he moved to Aberdeen; and from the Chair of Logic in Aberdeen he was, after a two years' tenure, elected to the Professorship of Logic at Glasgow, which he occupied till his death on the 5th of February of this year.

He had, in 1881, married Margaret, the daughter of Mr. David Duncan, a Manchester merchant, known for his literary and philosophical tastes and much interested in religion: a sufferer also, in a way, for his theological views, for he was ejected for heresy from the Society of Friends. Dr. Adamson's domestic life was in every sense fortunate and happy. Father and mother shared the same tastes, sought the same high ends,

and set the same example before their children of steady industry and constant devotion to the best things that life has to offer.

Dr. Adamson's duties as a teacher of philosophy for twenty-eight years and, still more especially, the care and labour he spent on the practical affairs of the Colleges with which he was connected, made systematic production on a large scale impossible. The loss to British Philosophy will be deplored even by his colleagues, who best knew the value of his services to higher education ; for he was generous and far-sighted in his educational ends, and most persevering and skilful in employing means to attain them.

The writings he has left consist of Articles, many of which appeared in the *Encyclopædia Britannica*, and of two comparatively small volumes, one on Kant and the other on Fichte. At the time of his death he was engaged upon a *History of Psychology*, and had also undertaken for the Messrs. Macmillan & Co. a work on *Kant and the Modern Naturalists*—for both of which he was, in my opinion, equipped better than any other philosophic scholar in the English-speaking world.

He did not write out his lectures, nor always make use of even the briefest notes. But he had gradually formed the habit of speaking slowly, and he had such a mastery over his materials and over the order and arrangement of his own ideas that I believe the devotion of his students will make it possible to recover this most suggestive part of his thinking.

I am not inclined to attempt to form an estimate of the value and significance of his published writings. Every genuine student of philosophy will do this for himself. Dr. Adamson wrote nothing on second-hand information. He exhausted not only the author whose views he summarised, but the literature that had grown around him. This characteristic trait appears in a somewhat plain spoken criticism of Dr. Mc Cosh's *Scottish Philosophy*, written by Mr. Adamson when he was very young, and in which he made it all too plain to the exponents of the philosophy of Common Sense that the critic had a much fuller and more accurate knowledge of the field than the author. The same thoroughly scholarly quality characterised all his articles—on Roger and Francis Bacon, on Butler, Hume, Berkeley, on Kant, Fichte, Schelling, etc. ; and his long article on Logic in the *Encyclopædia Britannica* is without a rival in English for conciseness of statement and erudition.

But his learning had not inundated and swamped his mind. It was alert, keen, incisive ; and, whether in his writings or in his discussion of College affairs, he was the most dispassionate and impersonal critic I ever knew. Without in the least dulling the edge of his logic, or compromising his own views, he stated his author's doctrine as if it were his own—with uncompromising clearness, with sure instinct for the greater issues, and with a scientific objectivity which, had he lived, could have made him the greatest historian of philosophy in our language.

Of his own attitude towards the more fundamental issues in philosophy I should like to speak with much reserve, pending, at least, the publication of lectures. And even in his Lectures, I understand that his method was consistently historical and critical, and that he at no time systematically developed a doctrine of his own. Nor did personal discussion, for which he was always ready, reveal his full mind. By necessity of mental disposition he assumed a critical attitude towards a philosophical theory ; not from caprice, or any shallow fondness for contradiction, but because he made at once for those ultimate issues on which only the ignorant can be dogmatic. He had, I think, too little tolerance for half-lights. That which a mind of a more constructive bent might entertain as a hypothesis, recognising it as such, he would either set aside as of no value

or leave it to his opponent to develop positively. He was not a Sceptic in the lower sense of the term, but he demanded in philosophical speculation the utmost severity of logical method; and he was qualified beyond any of his contemporaries to compel caution, and to preclude satisfaction with anything short of scientific precision and, if possible, demonstration. Philosophy was to him not only the most difficult but the severest of all the sciences. He jealously watched the intrusion of the imagination, had a fundamental distrust of metaphor, and he would as soon leave room for the dogmatism of tradition, or 'faith,' or 'immediate certainty' in Mathematics as he would in Metaphysics. He did not entertain extravagant hopes in philosophy and recoiled from the intellectual enthusiasm of the German Idealists; but he was still further removed from any kind of misology. He used to call himself as regards some questions a Critical Positivist, and in general he was not confident of man's power to deal with ultimate principles. But he did not indulge a desire for any substitute for, or complement to, human reason, and he had no sympathy with the Will-to-believe attitude of mind. Early in life he had sat down to the game of thought and he demanded always that it should be played strictly.

I believe that his confidence in metaphysical construction was less in his later than in his earlier years; and he had come to look for any real advance in knowledge to the special sciences. In this restricted sense he was moving towards Empiricism: not, however, that he could retract what he said, for instance, in his article on Hume, "So far as metaphysics is concerned, Hume has given the final word of the empirical school. . . . So far as we can see, the only systems of thought which have endeavoured, or are endeavouring, to take up anew the work of philosophy, are, on the one hand, the Kantian with its extensive developments, and, on the other, that of scientific Naturalism, which latter, though weak in its metaphysics, is yet penetrated with a truly philosophic spirit." He was an empiricist on the higher plane of science as Hume was an empiricist on the plane of common sense. And if we adopt, for the moment, the Kantian distinction between reason and understanding, I may say that he recoiled from the constructive use of the former.

But I would hesitate to call him either a Kantian or Neo-Kantian. Having 'gone back to Kant' he realised clearly the necessity of going forward from Kant. So that, in the spirit of Kant's idealistic successors, he rejected the division of the objects of thought into phenomena and noumena. He considered that up to a certain extent man knew facts *as they are*. He repudiated the distinction between 'Appearance' and 'Reality'; for, in a sense, all was Appearance and all was Reality, the former being the manifestation of the latter in human Experience. On the other hand he did not identify truth and existence. He had little sympathy with the modern reduction of reality to 'experience': less than he had with the earlier identification of reality with 'thought'. 'Experience' seemed to him to have no advantage over the earlier term —it was simply more indefinite.

It was from this point of view that he would occasionally call himself a Realist rather than an Idealist. But I never saw him yield to the temptation of endeavouring to express in any single conception his view of the nature of the real; although he was ready to recognise that a philosophy which stopped short of such a characterisation and sought to rest in any dualism or pluralism failed in its one mission. In the last resort he was thus consistently critical, and hesitated to assume any positive attitude, for which, as he held, human knowledge was, at least as yet, not ripe.

On the other hand, I must accentuate the fact that his criticisms of the various schools of philosophy were consistently advanced from the Idealistic, and one might almost say from the Hegelian, point of view. For instance, he rejected, with Hegel, the opposition between the form and the matter of thought, between facts and principles, between things and their relations. Judgment, or rather, Reasoning, was the unit of thought, and its elements were distinguishable only by abstraction ; and as all reasoning involves both principles and their application to (or in) facts, it was at once deductive and inductive, and speculation was at once rational and empirical. But he dissented strongly from Hegel's logical method and rejected the dialectical movement as a whole, so far as it is regarded as either *a priori* in its movement or ontological in its content. 'Truth' to him was not the name of any *thing*, and constituted no realm of intellectual apprehension which could be identified with or opposed to existence. Truth was simply the way in which experience was organised by the thinking mind. So regarded, the ordinary antithesis between 'essential reality,' or scientific knowledge, and the world of phenomena or facts disappeared. The essential reality was only the generalised apprehension of that concrete reality which is called phenomenal. The exposition of the character of this apprehension could be fruitfully sought (as in the case of any other fact) by a particular science, namely, psychology. It is a fact which exists in time and may be called subjective, but, he strongly insisted, the act or process of apprehension could not be separated and considered apart from the content apprehended, any more than the content which gives definiteness to the act of apprehension can be separated and regarded as an existent either trans-subjective or intra-subjective. And from this point of view he disagreed both with the Berkeleyan and the Naturalist doctrines. Qualitative differences cannot be explained by being referred to the mind or subject. They are as real as the conditions to which physical science seeks to reduce them. From *no* general principles, such as self-consciousness (abstractly conceived), can we extract, without appeal to experience, the consequences which make up the detail of reality. Hence the view that we can deduce particular truths from the inevitable assumption that reality is intelligible he met with a denial : nothing can be deduced either as to the details, or as to the kind of intelligibility which the details would reveal. It is in this way, I think, that his main differences from the Idealists and his own Empiricism is to be understood.

Bearing upon the same fundamental position was his view of the Self as a resultant and not an original determining unity. He objected to Kant's method of explaining experience by the application of a fully equipped mind to what comes from without. And he believed that there is no way of reconciling this view of a self gradually realised, with the idealist principle of self-consciousness as the key to all problems, or with the assumption of the potential presence of the higher in the lower, or of all in every part. In other words, the introduction of the Absolute under any form or disguise seemed to him always to be a mere relegation of difficulties which we find in the relative, into a region of mysticism. The Occasionalists exhibited precisely the same procedure in a more naïve form. In this respect modern thought had made no real advance ; and he looked for no advance by this method.

A clear and decisive illustration of his general distrust of the constructive use of Universals, as well as of his own peculiar Empiricism which at once essentially depends upon and resiles from Idealism is to be found in an Essay on "Moral Theory and Practice," recently published in a volume called *Ethical Democracy*, edited by Mr. Stanton Coit

(Grant Richard & Co.). This essay is the more interesting as it is the only published expression of his views which Dr. Adamson had given for some years.

This sketch which I have attempted to give of Prof. Adamson's attitude towards some of the more pressing problems of modern philosophy must be considered as quite tentative. Indeed, it is my belief that he himself had not sought in a deliberate way to connect his views into a positive general theory. But even if it be true that his final word was critical and negative, all who, like myself, were privileged to know his mastery over human learning, the exceeding acuteness and subtlety and scholarly severity of his thought and his splendid intellectual honesty, will await with great interest the fuller expression of his mind which his *Remains* will bring, under the editorial care of Prof. Sorley.

HENRY JONES.

CORRESPONDENCE.

TO THE EDITOR OF "MIND".

SIR,

May I ask you in this way to correct a misinterpretation put upon a footnote of mine, in vol. i., p. 11, of my last edition of *Berkeley's Works*, in the interesting review with which you honoured the book in the April number of MIND.

Your reviewer charges me with misconceiving Berkeley's abbreviations —"M. T.," "M. V.," "M. S."—contained in the text, and lays stress upon this charge. I should indeed have been guilty, if, as he supposes, the note in question was intended to tell readers that Berkeley meant "M. T." to stand for "matter tangible," "M. V." for "matter visible," and "M. S." for "matter sensible". But I took for granted that intelligent persons would understand, without explanation, that "M. T." was an abbreviation for the Latin term *minimum tangibile*, "M. V." for *minimum visibile*, and "M. S." for *minimum sensibile*.

The purpose of the footnote (not explicitly conveyed by me, it seems) was to remind readers that under Berkeley's new conception of the reality of matter (*esse* is *percipi*), which dominates the *Commonplace Book*, those *minima* are the objective units or equivalents of tangible, visible, and sensible matter; in other words, that the tangible world is the aggregate of significant *minima tangibilia*, the visible world the aggregate of significant *minima visibilia*, and the whole sensible world the aggregate of significant *minima sensibilia*—actual reality without at least this *minimum* of sensuous realisation being impossible.

In thus connecting those *minima* with Berkeley's "New Principle," I assuredly had no design to disparage the many important mathematical, physiological, and psychological problems to which your reviewer seems to refer—subordinate although they were with Berkeley to the "Principle" with which his mind was at the time burdened, and under less duly proportioned relations than in his later and more matured writings, *i.e.*, *De Motu*, "Alciphron" (Dial. IV. and VII.), and "Siris," in which Active Causation and its necessary spirituality dominates.

The paradoxical expression of the "New Principle" in Berkeley's juvenile treatises, published in an unmetaphysical age, in part explains why for a century after his death he was hardly taken seriously by philosophers, while he was ridiculed popularly; although he is now re-

cognised as the English thinker who has led the way towards the philosophy of theism, as the ultimate interpretation of the universe of passive things and active persons that is truly human, practical, and conservative of our concrete experience.

I am, etc.,

A. CAMPBELL FRASER.

May, 1902.

MIND ASSOCIATION.

JAMES (Prof. William), 95 Irving Street, Cambridge, Mass., U.S.A., has joined the Association.

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